Manitoba

ANNUAL REPORT

1984 - 1985

Manitoba Health
Services Commission

Laboratory and X-Ray
Services Division

ANNUAL REPORT

LABORATORY AND X-RAY SERVICES DIVISION

MANITOBA HEALTH SERVICES COMMISSION

APRIL 1, 1984 - MARCH 31, 1985

Dr. G. W. Hammond, Director
Laboratory and X-ray Services Division
Manitoba Health Services Commission
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LABORATORY AND X-RAY SERVICES DIVISION
MANITOBA HEALTH SERVICES COMMISSION

ANNUAL REPORT
APRIL 1984 - MARCH 1985

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MESSAGE FROM THE DIRECTOR

As the new Director for the Laboratory and X-ray Services Division, Manitoba Health Services Commission, I would like to take this opportunity to introduce the 1984/85 annual report. Firstly, I would like to express my personal thanks to our former Director, Dr. J. C. Wilt for his guidance, and wish him well in his duties as Assistant Deputy Minister, Community Health Programs, Department of Health.

The Laboratory and X-ray Services Division is comprised of the Cadham Provincial Laboratory (CPL) and Laboratory and X-ray Unit Services (LAXUS). The successful activities and coordination of these two components of the Division is attributable to the energy of many individuals. We believe this unique organization serves Manitoba well. Our continued goal is to maintain and to strive for excellent services based upon relevant, high quality, timely results, up to date testing methods, and good depth of service in selected areas. To maintain these high qualities of service, a five year divisional plan will emphasize optimal communication with users, a priority on quality assurance programs, the intent to ensure active and relevant educational activities of our staff, the strengthening of research and development activities to keep the Division abreast of modern technology, selective decentralization of tests procedures and the encouragement of increased communication with other provincial and national health care agencies.

During the fiscal year, to optimize divisional operations, several management changes were instituted. These included: a divisional Medical Staff Committee to review directional issues; a CPL Laboratory Management Committee with a broader laboratory representation to review and approve policies and procedures affecting the CPL (to replace the former CPL Advisory Committee); a Quality Control Committee to coordinate, monitor and recommend on Divisional QC matters; and an ad hoc Cost Accounting Committee.

For feedback on our services, we continue to rely upon direct input from individual physicians. To obtain physician feedback, a questionnaire inquiry was carried out during this fiscal year. Generally, a high level of satisfaction was indicated, and some suggestions for improvement will be implemented in the coming fiscal year. In addition to liaison with the Manitoba Health Services Commission and the Department of Health, numerous committees and their experts provide valued directional input (Neonatal Screening Committee, Alpha Feto Protein Committee, Chemistry Advisory Committee, Ultrasound Advisory Committee, and the Manitoba Advisory Committee on Infectious Diseases). The Laboratory and X-ray Services Division welcomes suggestions from our users that will help us provide better service over the coming years.

SENIOR STAFF LISTING

DIVISION DIRECTOR: G. W. Hammond, M.D., FRCP(C) (Int. Med., Med. Micro., Inf. Diseases)

LABORATORY PHYSICIANS: J. G. Fox, M.D., FRCP(C), Dip. Bact. (Tor), L. H. Sekla, M.B., B.Ch., DTM&H, D.M., Ph.D., T. W. Williams, M.B., B.Ch., DPH, FRCP(C) (Ped. & Med. Micro.)

MANAGER, RURAL UNITS: M. W. Burroughs, FCAMRT, A.C.(R), R.C.T.

ADMINISTRATIVE OFFICER, CPL: J. M. Thompson

SCIENTISTS, CPL: G. Ahluwalia, B.Sc., D. E. Gelskey, M.S., MPH, Dr. PH., A. C. Maniar, M.Sc., Ph.D., D.Sc., W. Stackiw, B.Sc.

REGIONAL SUPERVISORS, RURAL UNITS

EASTERN MANITOBA: X-RAY - L. Wilson, R.T., R.C.T.
LABORATORY - Wm. Strukoff, DHA, R.T.

WESTERN MANITOBA: X-RAY - E. Carroll, R.T., R.C.T.
LABORATORY - W. Yaschyshyn, R.T.

NURSE EPIDEMIOLOGIST: D. Phippen, R.N.

DIVISION SPECIALIST TECHNOLOGIST: S. Giercke, A.R.T.

EDUCATIONS OFFICERS

X-RAY: J. D. Brownlee, B.Sc., R.T.
LABORATORY: A. N. C. Delaat, A.R.T.

DIVISION ACCOUNTING CLERK: C. McComber

CHIEF TECHNOLOGISTS, CPL

CLINICAL MICROBIOLOGY
R. Barker, B.Sc., R.T.

ENVIRONMENTAL MICROBIOLOGY
S. Dzogan, B.Sc., R.T.

METABOLIC DISEASES
R. Thompson, DBT, R.T.

SEROLOGY/PARASITOLOGY
G. Eibisch, R.T.

TECHNICAL SUPPORT
A. Norrie, R.T.

VIRUS DETECTION
B. Klisko, R.T.

AREA CHIEF TECHNOLOGISTS, RURAL UNITS

INTERLAKE AREA
L. Russell, R.T.

SELKIRK AREA
D. Sirett, R.T.

SOUTHERN AREA
L. Baker, R.T.

SWAN VALLEY AREA
E. Kindrat, R.T.

VIRDEN AREA
P. Rocan, R.T., R.C.T.

SOUTHWEST AREA
B. Phillips, R.T.

RUSSELL AREA
D. Preston, R.T.

NEEPAWA AREA
L. Novak, R.T.

DAUPHIN AREA
D. E. Slimmon, R.T.

PORTAGE AREA
D. Fotheringham, R.T.

CHIEF ECG TECHNOLOGIST
L. Brooks, R.C.T. (Adv.)

PERSONNEL REPORT

During 1984/85 Fiscal Year, the Division welcomed new staff:

Mrs. G. Allan	- Virus Detection
Mrs. F. Borley	- Swan River
Mr. P. Cadman	- Administrative Services
Miss L. Caparas	- Technical Support Services
Miss C. Coulson	- Dauphin
Mrs. R. Edwards	- Dauphin
Mr. R. Godal	- Administrative Services
Mrs. B. Harkness	- Portage
Mrs. S. Hildebrand	- Morris
Miss K. Janssen	- Portage
Mrs. P. Jasper	- Portage
Mrs. B. King	- Deloraine
Mrs. B. Mitchell	- Administrative Services
Mrs. S. Nisbet	- Gimli
Mrs. W. Pappas	- Ste. Rose
Miss C. Preston	- Administrative Services
Mrs. J. Rowland	- Birtle
Mrs. M. Stanbra	- Administrative Services
Mrs. L. Steski	- Ste. Rose
Mrs. S. Thaczuk	- Roblin
Miss M. Wishart	- Gimli

Staff who left the Division during the year:

Miss F. Bickford	- Morris
Mrs. N. Bogers	- Roblin
Mr. P. Cadman	- Administrative Services
Mrs. D. Cosgrove	- Virden
Mr. A. Demoline	- Portage
Miss E. Duelas	- Administrative Services
Mrs. P. Flint	- Administrative Services
Mrs. L. Freeman	- Ste. Rose
Miss J. Gillies	- Gimli
Mrs. J. Henderson	- Morris
Miss E. Klassen	- Morris
Miss W. Podborochynski	- Selkirk
Miss D. Pugh	- Technical Support Services
Mrs. J. Richardson	- Killarney
Mrs. D. Romanow	- Portage
Mrs. C. Spriggs	- Portage
Mrs. L. Steski	- Ste. Rose
Mrs. L. Wiebe	- Portage

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Mrs. W. Pappas	- Ste. Rose
Miss C. Preston	- Administrative Services
Mrs. J. Rowland	- Birtle
Mrs. M. Stanbra	- Administrative Services
Mrs. L. Steski	- Ste. Rose
Mrs. S. Thaczuk	- Roblin
Miss M. Wishart	- Gimli

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Mrs. D. Romanow	- Portage
Mrs. C. Spriggs	- Portage
Mrs. L. Steski	- Ste. Rose
Mrs. L. Wiebe	- Portage

PROMOTIONS

Congratulations go to:

Dr. G. W. Hammond, M.D., appointed Director, Laboratory and X-ray Services Division, effective April 14, 1984.

Miss Maureen Grieger, R.T., promoted to Section Head - X-ray at Swan River, effective October 27, 1984.

Mr. Eldon Jones, R.T., promoted to Chief Technologist at Morris, effective August 25, 1984.

Mrs. D. Ratcliffe, R.T., promoted to Charge Technologist at Gilbert Plains, effective October 13, 1984.

Mrs. Elizabeth Stockl, R.T., promoted to Technical Specialist - Chromatography, in Metabolic Diseases, CPL, effective November 10, 1984.

Mr. Brian Stoski, promoted to Medical Technologist 3, as the Ultrasound Technologist at Winkler, effective March 31, 1984.

CADHAM PROVINCIAL LABORATORY

ADMINISTRATIVE SERVICES SECTION

The Administrative Services Section continued to provide support services to the CPL and to LAXUS during the 1984/85 fiscal year in the following areas: accounting, building management, clerical/secretarial, data processing/receiving and mail, and stores/purchasing.

During this fiscal year the acquisition of a word processor greatly enhanced the work of the secretarial staff. It's use as a microcomputer with the Formula II software package is being evaluated.

Mailroom procedures were reviewed and revamped to effect economies in delivery services to rural Lab and X-ray Units.

With the planned cessation of the TWX network in December 1985, alternative communications systems must be found to report urgent results to rural areas. One option, a small, silent terminal (which produces hard copy), and a telephone coupler was found to be economical and very easy to use.

CADHAM PROVINCIAL LABORATORY

CLINICAL MICROBIOLOGY SECTION

The Clinical Microbiology section of CPL provides diagnostic and reference microbiological laboratory services.

Highlights

The study begun last fiscal year, in co-operation with clinics in Winnipeg, the Health Sciences Centre (Dr. M. Slutchuk), the University of Manitoba, Dept. of Medical Microbiology (Dr. R. Brunham) and the Canadian Forces Base in Winnipeg to find a more efficient and more effective method of diagnosis of Chlamydia trachomatis infections, was completed. C. trachomatis, a frequently occurring sexually transmitted pathogen, formerly required costly and time-consuming culture procedures. A procedure using monoclonal antibodies (MicroTrak - Syva Co.) was tested extensively (474 tests). It proved to be of sufficient sensitivity (93%) and specificity (95%) to warrant its introduction province-wide for diagnosis of acute cases of chlamydial infection.

Another phase in evaluation of the MicroTrak Test will be to ascertain the accuracy of this test in asymptomatic patients. This will be undertaken in cooperation with Dr. R. Brunham, and Dr. B. Binns, both of the University of Manitoba.

Another major change has been in testing for the Group A Streptococcus (S. pyogenes). Previous testing required culturing specimens for streptococcus on medium containing sheep red blood cells. The transportation of these cells proved difficult in our adverse climate. The new test (Strep I.D. - Nordic Scientific), which requires rigorous quality control, circumvents culturing and allows a specific antigenic component of the organism to be chemically extracted and then to be detected by latex agglutination. The specificity and sensitivity were both in excess of 90%, and this test is being introduced into all rural Laboratory and X-ray Units in Manitoba.

The third major change has been in the detection of Neisseria gonorrhoea, an important cause of sexually transmitted disease in Manitoba. This organism survives poorly outside the body. Adverse weather conditions and long transportation times greatly reduced the number of positive cultures from patients with gonorrhoea. The new test (Gonozyme - Abbott Labs) is an enzyme immunoassay which detects cell wall components of these organisms, viable or not, and thus obviates culturing and the need for the organisms to be viable. The sensitivity and specificity of this test (each in excess of 92%) make its adoption ideal for rural Manitoba, and plans are to implement this new procedure in early 85/86.

A new rapid test for Clostridium difficile toxin testing was developed as a coopertive effort between our department and Dr. T. Louie (University of Manitoba).

CADHAM PROVINCIAL LABORATORY

VIRUS DETECTION SECTION

The Virus Detection Laboratory is responsible for detection of viruses or virus antigens (except for hepatitis B virus). Over the past year, more of our technologists have been trained on fluorescence microscopy for examination directly from clinical specimens. We have deleted the routine use of the microneutralization test for diagnosis of enterovirus infections as a result of developmental work on a coxsackie B virus IgM test performed by Mr. Don Chan, as part of his successful completion of his M.Sc. thesis. This diagnostic test for coxsackie B virus IgM antibody has shown an increased sensitivity and specificity and is to be used selectively for investigational use only in patients with well documented pericarditis, myocarditis, and CNS infections. The latex agglutination test continues to be a useful screening procedure during winter months for rotavirus infection, although we have had a noticeable decrease in the number of rotavirus-positive specimens detected this winter. Modifications to the computer system reports received by physicians have been made throughout the year, and this system continues to run efficiently. An extensive review of the unit values per test type was completed and new unit values were implemented at the beginning of this fiscal year. Computerization of the unit value calculation provides us with a time saving monthly report and a year-end total.

Highlights:

At the invitation of the Canadian Infectious Disease Society to the Dept. of Medical Microbiology, Dr. Ho Hsin and Dr. Chang Te-Cheng visited the CPL briefly in September. These visitors from Beijing, China discussed briefly the importance of hepatitis B infections in China and the special care facilities for hepatitis B virus infected patients in that country. In January 1985 Dr. Roger Amy, a pathologist with the University of Alberta was jointly invited by the University of Manitoba, Departments of Pathology, and Medical Microbiology and the Cadham Provincial Laboratory to give a talk entitled "Pathological Studies of the Franklin Expedition, 1984". Future collaborative studies in microbiology are being planned for the next expedition. In conjunction with an invitation from the Department of Medical Microbiology, Dr. Lorne Babiuk, a virologist and professor at the University of Saskatoon visited the CPL and discussed research and virological investigations, and new research methodologies at the Veterinary Infectious Disease Organization (VIDO).

Five neonatal herpes simplex virus infections were detected in the 1984 calendar year, bringing the two year total of 1983-84 to eight cases, four of which were fatal. This apparent marked increase in the number of neonatal infections caused by HSV in Manitoba (only two confirmed cases were noted over the period 1980-1982) will be reviewed.

A large number of untypable enterovirus isolates were detected in the summer of 1984. Recently one of these isolates was typed at the

Enterovirus Reference Laboratory, CDC, as an Echovirus 18 strain. In collaboration with Dr. Barbara Law, Dr. F. Aoki, and Dr. R. Pagtakhan, a study with the aim of improved diagnosis (including direct immuno-fluorescence) of hospitalized children with respiratory virus infections at the Children's Hospital was continued through 1984-1985. The virus laboratory objectives are to provide a more rapid diagnosis of these pediatric respiratory infections for purposes of optimizing hospital infection control procedures, and with the potential of offering newly available therapeutic intervention for selected and severe respiratory virus infections.

Collaborative studies on a variety of anti-herpes drugs in clinical practice continue with Dr. F. Aoki. The multicentre study of herpes simplex virus encephalitis treatment has recently been completed, showing greater benefit from Acyclovir vs. Vidarabine.

Influenza activity has been mild, with only a few isolates of influenza A/Philippines-like virus in January/85. Influenza B/USSR-like viruses, and possible variants of this virus increased substantially in February and March/85.

In collaboration with Dr. C. Hannan of the Dept. of Medical Microbiology, University of Manitoba, studies to improve the diagnosis of fastidious enteric adenoviruses by DNA hybridization were continued. This technology represents an important direction for new diagnostic methods in virus detection, and this practical model system should give us useful experience. Further assistance in this and related projects will be possible with the help of Mr. Timothy Scott-Taylor as he performs investigations during his graduate studies.

Although we have had untimely illnesses to two of our individuals working our cell culture laboratory, we have very fortunate through this period to have excellent quality of cell products. Mrs. Rita Gosselin-Kein has provided invaluable assistance in this section of the laboratory. Introduction of new products such as synthetic serum to replace the more expensive fetal calf serum, and the use of plastic culture tubes have improved efficiency and quality of cell products. Rabbit kidney cell culture has been introduced to improve the speed of detection of Herpes simplex cultures.

CADHAM PROVINCIAL LABORATORY

ENVIRONMENTAL MICROBIOLOGY SECTION

The Environmental Microbiology Laboratory tests environmental samples (water, waste, food and air) to detect microbiological contamination.

Highlights:

1. Waters and Wastewaters:

The Roblin Study of the microbiological hazard associated with spray irrigation on agricultural land using sewage effluent was continued for the third summer. The lagoon effluent from cells 2 and 4 met Manitoba's standard for discharge into surface waters (ie, <200 faecal coliforms per 100 ml). A Reovirus 3 was isolated from cell 2 effluent. An experiment was designed to study the effect of spray irrigation on bacterial counts; the expected reduction in number of bacteria was NOT observed.

Spot testing of waters for nitrates was discontinued at the Cadham Provincial Laboratory and is now provided at the H. M. Ward Technical Services Laboratory.

A study of recreational surface waters was conducted in collaboration with the Department of Health (Mr. J. Gow and Dr. C. Greensmith), and the Environmental Management Division (Mr. D. Brown and Mr. D. Williamson). Several beaches on Lake Winnipeg and Lake of the Woods were sampled at regular intervals during the summer months. These were tested for faecal coliforms, faecal streptococci, Staphylococcus aureus and Pseudomonas aeruginosa. Results indicated good water quality in almost all locations sampled. Since water quality cannot be assessed on the basis of a single year's data, this study will continue in the summer of 1985.

In collaboration with the City of Winnipeg staff, wading pools were tested regularly during the summer of 1984 for total coliforms, faecal streptococci, and Staphylococcus aureus.

Isolates of Pseudomonas aeruginosa from forty-five whirlpool and swimming pool samples (mostly collected in the City of Winnipeg) were serotyped. Nine different serotypes (10 and 11 most commonly) were detected.

In collaboration with Dr. P. Warren and Dr. S. Parker, an acid fast bacillus was detected in a water sample obtained from a private s swimming pool, to which 3 cases of atypical Mycobacterium pneumonia had been exposed.

Legionella pneumophila serotype 1 was isolated from 5 water sample collected from a hospital as part of an investigation for possible source of infection of a confirmed case of Legionnaires' disease.

In June 1984, high numbers of coliforms were detected in potable water aboard 2 different cruise boats.

In collaboration with the City of Winnipeg, a baseline study of Shoal Lake water was conducted in September-October 1984, including tests for enteric viruses and Giardia lamblia. None were detected. This study is to continue in 1985.

Red River water samples collected by City of Winnipeg staff yielded a Salmonella typhimurium. Multiple antibiotic resistance was not detected in 18 coliform isolates from the Red River.

"Iron bacteria", a group of nuisance bacteria that can cause fouling and plugging of wells and distribution systems, were detected in eight well water samples obtained from different parts of the Province.

A Salmonella ohio was isolated from egg wash water. This testing is performed to fill a requirement set up by Agriculture Canada.

In collaboration with Mr. J. Sisler (Food Directorate, Department of Health) and with the City of Winnipeg, a new sanitizer considered for use in beverage rooms was evaluated.

2. Food

The following fungi were detected in foods:

a) A yeast was grown from a commercial cream soda.

b) An Aspergillus spp. was isolated from a margarine container.

c) Geotrichum spp. and some Arthrospores were found in a sample of apple juice.

In collaboration with the City of Winnipeg staff, 1,575 soft ice cream samples were submitted. High bacterial counts were detected in 311 instances. The closure of 21 ice cream freezer machines was based on their failure to meet acceptable bacterial standards on two consecutive occasions.

High bacterial counts and E. coli were repeatedly detected in egg salad sandwiches obtained from different commissaries and in-flight kitchens.

Both Clostridium perfringens and Salmonella typhimurium var copenhagen were isolated from a raw chicken collected from a restaurant in Winnipeg.

A cyst obtained from caribou meat from the Northwest Territories was found to be caused by Brucella suis.

In an investigation of a food-borne outbreak involving approximately 90 patients, high aerobic bacterial counts and E. coli

were detected in the turkey and cabbage rolls consumed. Coagulase positive Staphylococcus aureus was also isolated from the turkey.

Subsequent to a complaint received from a patient, Bacillus cereus was found in a cheese sauce served in a restaurant.

A coagulase positive Staphylococcus aureus was isolated from a nut paste served in a restaurant.

In collaboration with Mr. J. Sisler and with the City of Winnipeg staff, an experiment was designed to determine the bacterial content of CO_2 packaged sandwiches, at their expiry date. Results indicated that although the bacterial flora increased with time, coliform counts were absent or low, no coagulase positive staphylococci were isolated. The sandwiches, with one exception, appeared fresh and had no odor due to spoilage.

Two persons became ill 7-9 hours after eating roast beef in Winnipeg. Clostridium perfringens was detected in the roast beef and gravy tested.

3. Research and Development

Legionella spp: Enrichment media were investigated to improve the isolation rate. Nineteen strains of species were obtained from the Laboratory Centre for Disease Control, Ottawa, subcultured and stored at -70° C.

Arboviruses: A plaque assay for California and Western Equine Encephalitis (WEE) viruses was developed and used in the 1984 surveillance program. This technique detected WEE viruses in 5 pools of mosquitoes collected in mid-August. The use of a duck embryo cell line improved the sensitivity of the plaque assay as results were completed within 24-48 hours. Rapid confirmation of WEE isolate can now be done using a fluorescent antibody test. An IFA procedure for the detection of specific IgM to WEE in human sera was also investigated. Only trace IgM positives were available for testing. Further sera are required before the evaluation can be considered complete.

Various procedures were evaluated for the concentration of waters and the detection of Giardia lamblia. No Giardia lamblia was detected in field samples.

A biochemical procedure for the differentiation of Streptococcus faecalis var liquefaciens (obtained from waters and human faeces) was evaluated. Since S. faecalis var. liquefaciens was isolated from clinical as well as from environmental samples, complex testing for differentiation of S. faecalis, using Mates' procedure, will not yield any useful data.

An attempt at transmitting Cryptosporidium from calf faeces to suckling mice (via the oral route) was successful. The faecal

preparations were checked for the presence of fungi, prior to inoculation. Cryptosporidium oocysts were not detected in some raw milk samples tested, possibly due to lack of a proper concentration technique.

4. Miscellaneous

Requests for Air Microbiology were received by CPL including investigations of the Legislative Building and the Manitoba Telephone System building, which revealed some fungi.

The arbovirus surveillance program was carried out in 1984. No cases of WEE were reported in humans or horses. The WEE virus was found in mosquitoes, late in summer, on 5 occasions. Serological signs of mild viral activity were noticed, late in summer, in the sentinel chicken flocks, as well as in the sparrows. The latter project was conducted in collaboration with the Environmental Management Division. Two human cases were reported as "presumptive" cases of California Encephalitis. These are the first two cases in Manitoba. The use of a plaque assay and that of a duck embryo cell line for WEE have increased the sensitivity of procedures for virus isolation from mosquitoes to the point that inoculation of suckling mice is now considered unnecessary and will not be routinely performed in future years.

A large group of employees from water/wastewater plants in the Province visited the laboratory; it was a good opportunity to explain the range of Environmental Microbiology services offered and the problems associated with poor collection and submission of samples.

CADHAM PROVINCIAL LABORATORY

SEROLOGY SECTION

The Serology Section determines the presence of antibodies or microbial antigens; the Parasitology subsection determines the presence and identification of parasites.

The highlights of the Serology-Parasitology section are as follows:

1. Interesting clinical cases

Eighteen cases suspected of having AIDS or ARCS were referred out to the LCDC for serodiagnosis; twelve were found to have antibodies to HTLV3; all 12 belong to "high risk" groups.

A varicella encephalitis was diagnosed in a 29 year old Caribbean male with a disseminated infection.

Two unusual cases of Epstein Barr virus infections were referred to the National EBV Reference Centre for Early Antigen and Epstein Barr Nuclear Antigen testing. One, a 14 year old Eskimo male was diagnosed as having an EBV-associated lymphoproliferative disease, the second, a 20 year old Japanese woman as having an EBV-associated tumor.

Two persons were found to have antibodies to *Yersinia enterocolitica*; one had a severe gastroenteritis after visiting Mexico; the second had a small intestine obstruction and was suspected of having Crohn's disease.

Brucellosis was diagnosed in a 34 year old woman from Baker Lake.

Mycoplasma pneumonia was diagnosed in a 13 year old male, based on the presence of specific IgM antibodies, cold agglutinins and CF antibodies in a single serum.

The pneumonia of a 26 year old woman was shown to be due to *Chlamydia trachomatis* by detecting IgM specific to this agent. Adult cases of pneumonia were believed to be caused by *Chlamydia psittaci* only, but recently, several reports have indicated that *C. trachomatis* can cause adult, as well as newborn pneumonia.

Two cases of deep mycosis were diagnosed serologically by the Mycology National Reference Centre:

a) Cryptococcosis, in a 56 year old male with a brain tumor.

b) Coccidiodomycosis in a 55 year old woman.

Three interesting cases of parasitic infections were diagnosed:

a) A 55 year old woman with abdominal mass was found to have a Hydatid cyst; the diagnosis was established serologically, (IHA titre of 1:16,384).

b) A 31 year old male returning from Ethiopia was found to have Schistosomiasis. (The serological test was performed at the National Reference Centre for Parasitology.)

c) High antibody levels to Toxoplasma gondii were detected in a newborn. The mother had a significant rise in antibody titres during her pregnancy; however, specific IgM antibodies were not detected in either mother or baby. The baby will be followed up clinically and serologically.

2. General trends

A total of 636 recent cases of Hepatitis A virus infections were diagnosed, based on the detection of specific IgM antibodies.

Several cases/carriers of HBsAg were detected in pregnant women belonging to various "ethnic" high-risk groups.

There were only 13 cases of recent rubella infections and no measles cases in 1984.

There has been a dramatic increase in the number of new cases of syphilis diagnosed during this fiscal year. Of the 142 new cases, 33 were classified as primary, 20 as secondary, 14 as early latent, 2 as late latent, 4 as neurosyphilis. There were 3 documented cases of re-infections and the CSF was positive in 8 cases. Twenty-one of the cases were females, one of them pregnant.

3. New Protocols

An evaluation of Streptococci serological tests resulted in a recommendation to restrict testing to the diagnosis of Streptococcal complications, to perform tests on paired sera, and to limit testing to ADB to those paired sera which are ASOT negative.

An evaluation of available Rubella tests showed that the detection of specific IgM antibodies can easily be done on single sera. A new protocol was recommended which will be implemented in the new fiscal year. All sera will be screened by passive haemagglutination for immune status. Recent infections will be diagnosed by an IgM ELISA.

An ELISA procedure was introduced for the diagnosis (ratios of O.D. values of acute and convalescent sera greater than 2.5) and determination of immune status to Mumps, Herpes simplex and Herpes zoster.

Two ELISA procedures were introduced in the Hepatitis section. One, for HBsAg, allowed the test to be performed daily, while the other

Anti HBcIgM, was found useful in assessing the infectivity of patients in the "core window".

4. Research and Development

Q Fever

Sheep used for experimental purposes at the University of Manitoba were routinely tested for C. burnettii (using both phase 1 and phase 2 antigens) by the micro-immunofluorescent technique. Reagents were obtained from Dr. Peacock of the Rocky Mountain Laboratory, Hamilton, Montana. No human cases of Q fever were detected in 1984.

Group A Streptococcal Serology (ASOT/ADB)

The kits which have been used for these tests in the past 5 years were suddenly discontinued by Beckman. Three replacement products were evaluated rapidly: Behring's ASOT/ADB, which was similar to Beckman's; Streptozyme (Horner), a spot test that detects both ASOT and ADB; LEAP strep (Cooper Biomedical), a spot latex enhanced agglutination test designed to detect both ASOT and ADB. Behring ASOT/ADB was selected as it is more sensitive in detecting ADB.

Chlamydia-IgM

An inclusion body immunofluorescent test by Virgo (Electro nucleonics) was evaluated. The test was compared to DFA and cultures to see if it could be used to diagnose C. trachomatis infections on single serum samples in cases of non-specific urethritis. Forty-eight samples from cases of non-specific urethritis were tested, and eight were positive by either DFA, culture or by both methods. IgM was not detected in the sera of these 8 cases nor in the rest of the samples. This test appears to be of limited value in the diagnosis of non-specific urethritis. In collaboration with Dr. N. Kordova, sera from recent cases of C. trachomatis who were both culture and CFT positive were tested, and Chlamydia IgM was detected in 19/26 patients with MIF procedure. Of 14 sera which were culture negative that had some antibody level to C. trachomatis, only one was found to be IgM positive, indicating that this test could be of value in diagnosing primary infections.

Mycoplasma pneumonia

As this is a treatable infection the diagnostic objective is to provide a rapid result to assist the physician in patient management. Two tests will be performed on all acute-phase samples that have a clinical history suggestive of a Mycoplasma pneumoniae infection: the cold agglutination test and a micro-immunofluorescence test for the detection of IgM; (the latter is in the developmental stage). Three antigens have been tested: Wellcome, MA Bioproducts, Microbix; all three are whole organism antigens; to date Wellcome antigen appears to be promising in detecting both IgG and IgM.

Respiratory Syncytial Virus - IgM Detection

An immunofluorescent test kit from Electronucleonics was evaluated using sera from recent cases diagnosed by complement fixation test. In all cases, IgM was detected in the convalescent phase sera. This kit would be of value where single sera only are available.

Rubella - Rapid Tests

Two tests were evaluated: Rubaquik, a passive-hemagglutination spot test by Abbott, and Rubascan, a latex agglutination spot test by Hynson, Westcott and Dunning. The two compared favourably with the HI test, but the Rubaquik was more difficult to read. A total of 205 sera were tested by HI, 120 of these were negative at 1:8 and 85 had titres ranging from 1:8 to 1:124. Compared to the HI test, the Rubaquik performed on these 205 sera had a sensitivity of 94% (ie: 5 false negative) and a specificity of 95% (6 false positive). A total of 91 sera were tested by HI and Rubascan (1:1), 48 were HI negative at 1:8 and 43 were positive 1:8-1:124. The Rubascan had a sensitivity of 98% (1 false negative) and 97% specificity (2 false positive). The manufacturer of Rubascan claims that both IgG and IgM are detected. Ten sera from clinical and laboratory diagnosed Rubella infection were fractionated by Quik-Sep column. The IgM fraction (1:10) was tested for IgM by Rubazyme and all ten were positive while none were positive by Rubascan.

Syphilis Screen Test

A screen test from NCS Diagnostics similar to the one in current use was evaluated mainly because the cost per test was lower. 487 samples were tested (355 random samples, 29 known positive, 35 known negatives and 68 weaky reactives). The sensitivity versus current test was 75%, specificity was 100%. This test was not as sensitive in detecting weakly reactive sera; 2 early cases of syphilis would have been missed.

Cytomegalovirus

a) Four tests were evaluated: Complement fixation (CF), Latex Agglutination (LA), ELISA IgG, and ELISA IgM (Behring Enzygnost). Of 5 paired sera that showed rises in CFT, there was 100% agreement between CF and LA in detecting rises in antibody titres. The ELISA IgM did not detect any IgM in patients with a rise in CF antibody levels. This may indicate reactivation (rather than a primary infection) or a lack of sensitivity; further work in this area is continuing.

b) Of 44 sera found to have antibodies by CFT 41/44 were positive by ELISA; 42/44 were positive by CMV Scan (LA).

c) Forty sera collected from breast milk donors which were all negative (-1:4) by CFT; 23/40 were positive by CMV-Scan (LA) and the ELISA IgG (Behring). It is known that CF antibodies persist for only a few years and may explain our results. Breast milk donors should be tested by either ELISA or CMV Scan.

d) CMV-IgM ELISA (Behring)

Fifteen pairs of sera that showed a rise in titre by CFT and nine high titre single sera were evaluated using CMV-IgM (Behring). 1/15 was positive, but was also RF positive as well. Specificity of CMV IgM was tested against 7 pairs of HVZ positive sera. All were negative. CMV IgM test is promising; appears to be specific and sensitive.

c) Fifty-four random, fresh sera were tested by both CFT and CMV-Scan. 45/54 (83%) were negative by CFT, 30/54 (55%) were negative by CMV-Scan. This may indicate a greater sensitivity of LA or may reflect in fact that CF antibody is known to persist for a relatively short time. This preliminary evaluation indicates that CMV-Scan can be a simple reliable test for the detection of CMV antibodies.

Varicella/Zoster IgG, IgM Antibody Detection by ELISA Technique

Difficulty in obtaining reagents for the Immune Adherence Agglutination (IAHA) test necessitated the introduction of another test. The demands for determining immune status to this agent are increasing - usually on a stat basis in response to an outbreak in a hospital. The ELISA IgG was found to be more sensitive in detecting antibody and is currently in routine use. The ELISA IgM detected IgM antibodies in acute-phase samples of primary chicken pox, but not in cases of Herpes zoster. Both tests are now in current use routinely.

Anti Nuclear Antibody (ANA), Anti Smooth Muscle Antibody (ASMA) and Anti Mitochondrial Antibody (AMA)

Four ANA kits were evaluated:

a) International Diagnostic Technology (IDT): FIAX using Hep 2 cell line.

b) Calbiochem Behring AFT system I, using mouse kidney as a substrate.

c) Electronucleonics Anti Nuclear Antibody using KB cell line.

d) Kallestad Quantafluor using Hep 2 Cell line.

Electronucleonics and Kallestead were preferred; both were equally easy to read and found to be as sensitive and specific as the procedure used by our reference laboratory.

Comparative studies with our reference laboratory were also done on 14 sera tested for Anti Smooth Muscle Antibody (ASMA) and Anti Mitochondrial Antibody (AMA) using Behring's AFT system I. Eleven positive AMA sera were quantitated and results compared with a reference laboratory. All titers correlated within a two fold dilution. A titer on one positive ASMA correlated with the reference lab. Two doubtful ASMA which were recorded as negative were confirmed by the Reference Laboratory.

CADHAM PROVINCIAL LABORATORY

TECHNICAL SUPPORT SERVICES

Technical Support Services is comprised of three sections: Quality Control, Media and Sterilization. These units provide various services to the Division.

QUALITY CONTROL SECTION

This section continues to coordinate the C.A.P. Comprehensive Microbiology Proficiency Survey and, in 1985, the C.A.P. Virology Survey.

Internal proficiency testing is provided to the Clinical Microbiology, Virus Detection and Viral Serology sections of the CPL. As well, Microbiology proficiency testing and a Gram stain review was undertaken this year to assist in problem areas of staining and interpretation.

All purchases of Antibiotic discs, Uri-dips, blood cultures, API strips, Rapid I.D. systems, Beta lactamase tubes, optichin and bacitracin discs and other reagents are now being pretested before use for Microbiology testing in the Division. There will also be ongoing testing during and near the end of the shelf life to determine the stability of the products. This service should provide users with more confidence in the quality of the products.

MEDIA SECTION

This section will begin to experience shifts in demand from routine media to more specialized media as the use of kits becomes more prevalent.

Alternative and additional Media researched this year include:

a) FBP Agar, DNA Hydrolysis and Rapid Hippurate Hydrolysis - for rapid identification of Campylobacter biotypes. These media have been added to the routine in Microbiology.

b) CIN Agar - for the isolation of Yersinia. This media was prepared for a special project to determine the prevalence of Yersinia spp. in Manitoba.

c) Buffered Saline with 1% Mannitol - to enhance the growth of Yersinia. This buffer is used in the special project for Yersinia spp. and appears to be working well.

d) Brucella Agar with 5% Human Blood - for identification of G. vaginalis. This media was not satisfactory for use in Microbiology.

e) Trichophyton Test Media - for differentiating Trichophyton species.

f) Pseudosel Agar - for identification of Ps. aeruginosa. This agar proved more satisfactory than Tech or Cetrimide agar and replaced both.

STERILIZATION

An extremely important function of every laboratory is effective decontamination and sterilization. The staff in this section are very cognizant of this and work cooperatively with all sections to maintain their high quality performance. Procedures are reviewed and adjusted to meet the requirement of each section.

CADHAM PROVINCIAL LABORATORY

METABOLIC DISEASES AND CHEMISTRY

Program Findings

During the year the newborn screening program detected one hyperphenylalaninemic (PKU), one galactosemic (compound heterozygote), three histidinemics, two primary hypothyroids and two cases of Hartnup Disease (twins) for a total of nine disorders of metabolism. Since this program began in 1965, all cases of metabolic disorders causing mental retardation have been corrected, preventing the debilitation of mental retardation.

New Programs and Procedures

The Metabolic Diseases section has developed alpha-feto protein testing of maternal serum for the detection of open neural tube defects in the fetus. Defects occurring during embrological development of the neural tube (spina bifida and anencepahly) are among the most common birth defects found in Canada. The incidence of these defects is approximately 2-3 per 1,000 live births and in 3-5% of spontaneously aborted fetuses. Anencephaly is incompatible with life and open spina bifida varies widely in severity.

The test is available during a trial review period of 1 year to any pregnant woman in the province whose physician participates in the program. Specimens should be submitted between 15 and 18 weeks of gestation to allow sufficient follow-up time should an abnormal level of AFP be detected in two consecutive maternal serum specimens. Follow up diagnostic testing can consist of: ultrasound, amniocentesis, AFP and acetylcholinesterase isoenzyme electrophoresis of amniotic fluid. Detection of an open neural tube defect results in extensive genetc counselling through clinical Genetics at the Health Sciences Centre.

This screening program resulted from the collaborative effort of the AFP pilot study team and lab, the related departments of the University of Manitoba and Health Sciences Centre, and the staff of the Metabolic Section of the Cadham Provincial Lab.

The section evaluated and modified a fluorescent spot test for the determination of the enzyme galactose-1-phosphate uridyl transferase in neonatal blood specimens. This test used in conjuntion with the quantitative galactose and galactose-1-phosphate assay can be utilized to confirm or rule out the most serious inborn error of galactose metabolism, classical galactosemia. This allows for rapid diagnosis and dietary intervention and the prevention of the clinical manifestations of classical galactosemia.

Ongoing research and method evaluation in the section has resulted in the implementation of a more accurate, sensitive and reliable neonatal thyrotropin R.I.A. procedure. This T.S.H. assay is used to

confirm primary hypothyroidism in neonates who have decreased and slightly decreased blood thyroxine concentrations.

Evaluation of methodology for the determination of 17-Hydroxy Progesterone in neonatal blood specimens is underway in the Metabolic Section. This analysis may provide a rapid and accurate means of detecting Congenital Adrenal Hyperplasia (CAH) in the newborn period. CAH, due to 21-hydroxylase deficiency, is an autosomal recessive condition which presents with a combination of acute adrenal insufficiency and progressive virilization due to inappropriate secretion of androgens by the adrenal cortex. Many of these patients are misdiagnosed as cases of gastroenteritis, pyloric stenosis or sudden infant death syndrome. With appropriate cortisol and mineralocorticoid replacement therapy, these children have normal potential for life, growth, development and intelligence. The feasibility of this activity is being reviewed by the Perinatal Screening Committee.

The Cholinesterase Screening Program for workers engaged in the use of organophosphate insecticides is available on a year round and province-wide basis. Applicators with the City of Winnipeg continued to heavily partake in the program during the summer season.

In the interests of employee safety, a large California type exhaust cabinet was installed for chromatography testing. This hood seems to handle the vapors from the solvent and staining procedures in a quite satisfactory manner. The section has been able to increase the utilizable bench space by locating the hood in the smaller of two connecting rooms.

RURAL LABORATORY AND X-RAY UNITS

LABORATORY: EASTERN REGION

The Laboratory services at the 71 Rural Laboratory Units include a range of chemistry, hematology, coagulation, blood banking, urinalysis and microbiology tests.

Quality Control Programs

The Division continues to monitor and ensure quality of laboratory analysis by participating in the following internal and external Quality Assurance Programs:

Microbiology - a comprehensive gram staining, sensitivity testing and culture identification Q.C. program co-ordinated for the participating Laboratory and X-ray Units by the Quality Control Section of the Cadham Provincial Laboratory.

Commercial Hematology control cells (internal program on all electronic cell counting apparatus).

Ames Urinalysis program.

The Cooper Biomedical "On-call" computerized chemistry quality control program will be in use until mid-1985. Following this the Division will be utilizing a similar chemistry QC program known as "Accutrac".

New Activities - Eastern Region

The Strep I.D. test has been introduced to the following Laboratory and X-ray Units: Morden, Portage, Selkirk, Beausejour, Steinbach, St. Pierre, Teulon, Gimli, Eriksdale, Arborg, Altona, Carman, and Morris enabling rapid, on-site diagnosis. Additional Units will be put on-stream as time and supplies permit.

The glucose and urea nitrogen testing programs will be updated and improved at Vita and Gillam with an Ames Seralyzer chemistry analyzer utilizing the dry chemistry principle. This will greatly enhance the turn-around-time for test results, eliminate reconstitution of substrates, and overall, is much more compatible with the restricted physical space of both departments.

The Quan T test total protein assay system for the quantitation of cerebrospinal fluid and urine proteins will be introduced as supplies become available. The assay is based upon the interaction of protein with the dye Comassie Blue and is an accurate and rapid method for quantitation.

The pregnancy testing program has been updated with the Organon Duo clon test. This test employs the two-site monoclonal technology

and is a highly sensitive and specific test for earlier detection of pregnancy.

A new method for the performance of erythrocyte sedimentation rates has been instituted. The Sediplast system consists of a disposable polystyrene autozero Westergren tube and receiving vial. The whole system is completely enclosed thereby greatly reducing the biohazard of aerosol formation.

Ugrading of Systems - Eastern Region

The Hematology program at the Portage la Prairie Lab and X-ray Unit was upgraded with the installation of the TOA Sysmex Model CC-780 automated cell analyzer. This is an 8 parameter instrument which provides the following profile: white cell count, red cell count Hematocrit, hemoglobin, platelet count, mean corpuscular volume, mean corpuscular hemoglobin concentration, and mean corpuscular hemoglobin. It is microcomputer controlled.

Electronic cell counter (Hematology) TOA Sysmex CC-180 with white blood cell, red blood cell, Hemoglobin, Hematocrit and platelet count capabilities was installed at the Morden Lab and X-ray Unit.

An AO unistat Bilirubinometer for the analysis of pediatric serum bilirubin was installed at the Steinbach Laboratory and X-ray Unit.

A new upgraded centrifuge was installed at Gimli and Arborg.

A much required program of electrolyte analyzer replacement was initiated this year. It is anticipated that six analyzers will be upgraded this year.

Various methods and procedures in the chemistry, microbiology and hematology section of the Procedures Manual have been revised and updated.

An extensive revision to the Consumable Supplies Catalogue (Central Warehouse) has been completed.

Research and Development - Eastern Region

The DMV 4010 chemistry analyzer and reagent systems was investigated.

An indepth evaluation of the Coulter 880, TOA Sysmex 780 and the Ortho ELT8 Hematology instrumentation was conducted at the Portage Lab and X-ray Unit.

An indepth evaluation of the TOA Sysmex CC 170, CC 180 and the Coulter Electronics 4/40 instrumentation was also undertaken at the Morden Lab and X-ray Unit.

The Allied Scientific Uri slide system was evaluated at the Steinbach Lab and X-ray Unit.

Glucose and BUN substrates (chemistry) from DCL Laboratories was evaluated at the Gimli Lab and X-ray Unit.

Serum containers and Urine/Stool mailing containers were evaluated at several Lab and X-ray Units.

Hematology cell diluent from Waldeck Scientific was evaluated at the Selkirk and Morden Lab and X-ray Units.

The IL 943 and Corning 480 Flame Photometers for sodium and potassium analysis were evaluated at the Portage Lab and x-ray Unit.

Microscope slides were evaluated at the Selkirk and Morden Lab and X-ray Units.

The Technicon RA 1000 chemistry analyzer was demonstrated and evaluated at the Portage Lab and X-ray Unit.

BDH and H-Pack stain packs for the Ames Hematek hematology slide stainer were evaluated at the Selkirk Lab and X-ray Unit.

Streck Laboratories Hematology control cells was evaluated in the Steinbach Lab and X-ray Unit.

Venu-Vu system for the detection of Veins during phlebotomy was evaluated at the Selkirk and Morden Lab and X-ray Units.

Becton Dickenson Sceptre Microanalyzer (bacteriology) and the Abbott Quantum chemistry analyzer were demonstrated.

Biosafety Vacusafe needle collection receptacle was evaluated at the Morden Lab and X-ray Unit.

Construction and/or Renovations - Eastern Region

Renovations/construction is at the Functional Program stage at Vita, Whitemouth, Manitou and Portage Units.

Renovations are completed at the Altona Lab and X-ray Unit.

Construction is to begin in the near future at Steinbach, Pine Falls, and Gillam Lab and X-ray Units.

RURAL LABORATORY AND X-RAY UNITS

LABORATORY: WESTERN REGION

New Activities - Western Region

The Strep I.D. test was introduced throughout western rural laboratories.

A more sensitive and specific method for pregnancy testing and routine Urinalysis was introduced.

Upgrading of Systems - Western Region

a) Spectrophotometers at Roblin, Crystal City, and Boissevain.

b) Blood cell counters at Deloraine, Boissevain, Reston, Birtle, Minnedosa, Lynn Lake, Leaf Rapids, and Roblin. A fully automated system was installed at Swan River.

c) A semi-automated chemistry system was installed at Virden increasing the scope of procedures performed at the local laboratory, as well as improving the accuracy and precision of existing methodology.

d) Upgraded training for the technologist at Glenboro has resulted in an expanded service available to local patients.

e) A modern new laboratory was a part of the hospital contruction project at Gladstone and Reston.

Objectives for 1985/86

A priority that must be addressed is a replacement for our current manual enzyme analysis, which is being phased out. This will require evaluation of more current state-of-the-art methods and instrumentaiton as well as capital dollars.

The continuation of the electrolyte analyzer replacement program.

Continued review and evaluation of current services, methodology, and equipment at various locations.

Continued replacement and upgrading of diagnostic instrumentation, especially of flame photometers and larger chemistry analyzers.

RURAL LABORATORY AND X-RAY UNITS

RADIOLOGY AND ELECTROCARDIOGRAPHY

The Radiological services provided to 71 Rural X-ray Units include a range of conventional x-ray imaging, fluoroscopy and ultrasound services. Electrocardiography services are also provided.

DIVISIONAL CONTINUING PROGRAMS:

Rare Earth Intensifier Screen Conversion Program

The final step in the conversion of the total Rural Lab & X-ray Unit Services to "Rare Earth" imaging began in January, 1985. It is expected to take approximately 7 months to convert the remaining 25 radiography departments that use the blue calcium-tungstate intensifier screen system to the new green light emitting gadolinum oxysulfide system.

This final stage is also in a sense, the most difficult. With the changing of the imaging system we also had to change the film type used and we are therefore this year completely phasing out the blue film that was required with the calcium-tungstate system. This is requiring extreme caution and extensive co-ordination throughout the whole region to minimize waste film and attendant costs.

From empirical experience over the last three years, we have confirmed the benefits expoused when the gadolinium-oxysulfide screens were introduced. We have found that patient radiation exposure could be reduced to 50% of the dose previously used and without any detrimental effect to the diagnostic quality.

Secondary benefits that we have experienced as a result of this reduction in exposure factors are increased use of the small focal spot which reduces geometric distortion and reduced exposure times which reduces image slurring due to involuntary patient motion. Extended anode tube life can be expected due to the reduced power load put on th tube.

DIVISIONAL RADIOLOGY QUALITY CONTROL ACTIVITIES:

The X-ray equipment Quality Control segment of the XQAP was expanded in early 1985. A comprehensive test protocol which was previously performed by the Regional Supervisor was introduced to the Area Chief Technologists (A.C.T.) and their Technical Specialists. The Division purchased two D.I.S.C. Supermeter machines which assess kVp, variable mA mAs linearity and mAs variables, variable exposure time and automatic exposure control time tracking, radiation output and linearity and light output from the ID printers with the optiwedge device. The new Quality Control parameters that each unit area now look after on their own are:

- Focal spot size measurement
- KVP calibration using Wisconsin Test Cassette
- Half-value layer estimate
- Ma station reciprocity
- mR per Mas output using pocket dosimeters
- Timer accuracy measurement
- Collimation accuracy
- Radiation field centering accuracy
- Bucky film centering
- Anode tube - film alignment
- Processor activity using "Opti wedge" system and hand-held densitometer.
- Maximum fluorescopic mR output rate
- Automatic brightness control function
- Automatic exposure control function and density control for spot-film and bucky radiography
- fluoroscopic tube high resolution assessment
- fluoroscopic low contract resolution assessment

This new addition, complimenting the Level 1 Quality Control performed by each department and the "Super meter I" tests conducted by the Regional Supervisor, the Lab & X-ray Services has a thorough and high quality program. It demonstrates the commitment to the main objective of improved care and safety of the patient.

Construction, Capital Equipment Purchases and Programs - Eastern Region

The Division's program of upgrading electrocardiograph machines has resulted in Morden receiving a three-channel Burdick E-310 machine. In addition, three single channel VS-550 Cambridge machines were purchased for the Southern, Interlake, and Selkirk Areas.

The Churchill Unit is participating in an assessment program of the MAC II, three-channel interpretative electrocardiograph machine. This machine has the capability of providing an immediate computerized report and of transmitting the tracing to The Pas (which has a similar machine) or to other locations in Manitoba.

An A.F.P. 14 XL film processor was purchased for the Ashern Unit and two A.F.P. 14 X 3 film processors were purchased for Teulon and St. Pierre to replace aging equipment. These models feature cold water processing, standby control systems and reduced operating costs.

Replacement radiographic/fluoroscopic equipment was purchased for the Altona Unit and consists of a General Electric DXD 350 II generator, Monitrol II table and overhead ceiling tube hanger.

The Steinbach Unit has not established an Ultrasound Department. The equipment includes a Diasonics DRF 400 R Real Time Ultrasound machine, a multi-format Schiff camera and a Pansonics VCR.

Planning and Construction

Divisional staff were involved with M.H.S.C. Planning and Construction staff and various architectural groups in feasibility studies for Vita, Whitemouth, Portage, and Manitou and planning detailes for Steinbach, Pine Falls, and Gillam.

Minor renovations were completed at Altona and Whitemouth in 1984.

Construction, Capital Equipment Purchases and Programs - Western Region

Flin Flon: Architectural plans are in the detailed stage and are near completion; renovations to the X-ray department and addition of new Lab, ECG and possible space for Ultrasound are included.

The Pas: A functional program has been submitted to The Pas Health Complex for expanded radiography, Ultrasound and ECG areas.

Swan River: Discussions have been taking place with the hospital regarding expanding X-ray to accomodate a second room, radiologist's office and Ultrasound.

Grandview: Detailed architectural plans are almost finished for a new hospital which will include a new Lab & X-ray Services department. A new radiographic suite is planned to include a single phase generator, pedestal table and ceiling tube mount.

Dauphin: The Dauphin Hospital began its major contruction program in the Spring of 1984. The Radiography, ECG, Ultrasound and general reception areas are due for completion in Summer of 1985.

A great deal of effort this past year was spent on preparing for this completion. Funding of $500,000 plus one Radiographic-fluoroscopic suite and one tomographic-radiographic suite of equipment was approved by MHSC following an extensive process of bid preparations, equipment evaluations, negotiations and purchase recommendations.

Two existing suites will be transferred to the new 4-room X-ray department.

Neepawa: Architectural plans for a new hospital wing to include a complete new Lab & X-ray Unit section was completed in the late fiscal year. New Radiographic-fluoreoscopic equipment is planned for the added second room. A combined processing-viewing area layout with a day-light film loading system was incorporated as a first for the Rural Lab & X-ray Unit System in these plans. This layout will be watched closely when in operation for potential application to other departments in planning stages.

Gilbert Plains: Construction plans for a personal care home with a basic visitation Radiography room are in the detailed architectural drawings stage now. It is planned that the mobile Radiographic Unit and table will be moved over when the hospital closes.

Gladstone: The addition of a new wing onto the existing hospital resulted in a new department for the Lab & X-ray services. Included in the building project was the acquistion of Radiographic-fluorscopic suite with closed circuit T.V., purchased from Deer Lodge Hospital in August, 1984.

Reston: A new LAXUS facility opened in July, 1984 with the completion of the Reston Community Hospital project. A new integrated table-tube stand system and a low volume processor were installed at that time.

Automated film processing was introduced into Winnipegosis for the first time this year. The aged automatic systems in Roblin and Minnedosa were replaced also this year.

A new radiographic generator was installed in February, 1985 in the Radiography Department of the Brandon Mental Health Centre.

A new compact, inexpensive and microprocessor controlled 3-channel electrocardiograph was purchased for Killarney. Its function will be assessed as to application to our needs in other departments.

One Marquette model MAC II was purchased and installed in The Pas for a field study of its computer augmented interpretation feature. Each Unit has its own on-board computer with software that will measure and print out the electrical rates and intervals and present an interpretation. This Unit was has digital recording and digital transmission. These features allow for direct communication with the one other Unit bought for and trialed at Churchill or with any other MAC II Unit. There is considerable potential for this type of digital transmission technology for future networking in our rural services.

LABORATORY MEDICINE EDUCATION

GENERAL:

Laboratory medicine education is centrally administered and co-ordinated for the Division.

Continued use was made of educational programs aquired from the Center for Disease Control in Atlanta, Georgia. These programs consist of a text, visual slides, and an audio tape. Each program covers a specific topic related to laboratory medicine and may run up to one hour. The programs can be studied by individuals or in groups, at minimum cost to the Division, and at maximum convenience to the participants. During the year, 154 staff utilized these programs.

An additional 15 programs were acquired from the Kettering Medical Center, and have been utilized 28 times.

Dr. Williams, and invited specialists, continued the Division's onsite visitations. While at these visits, formal and informal presentations are delivered to rural physicians, technologists, auxiliary staff and the public. Forty-six such presentations were made on topics such as: Immunity and Aging; Respiratory Infections; Faints and Falls; Child Abuse; Immuno-Diagnosis; Neonatal Pneumonia; Diabetes, and Personal Care Home Formular. In all, 651 individuals attended: 305 physicians, 139 technologists and 207 others. The Division is highly appreciative of the contributions made by the visiting specialists.

A review was made of the library needs of the rural laboratories, and 12 texts were subsequently added to our collection.

REGISTERED TECHNOLOGIST (RT) TRAINING

The Cadham Provincial Laboratory continued its role in the training of candidates toward certification as Registered Technologists with the Canadian Society of Laboratory Technologists. Two categories of candidates are being trained:

1) R.T. General Candidates: Our involvement in this program is limited to the delivery of some lectures at R.R.C.C., periodic visits by St. Boniface Hospital students to our laboratory, and our memberships on the Advisory and Curriculum Development Committees. We are concerned about the reduced intake in this program, and are currently studying anticipated manpower needs in rural Manitoba.

2) R.T. Subject Candidates: These programs are specially designed in order to train selected candidates for a minimum of one year in a specific discipline as recognized by the Canadian Society of Laboratory Technologists. Messrs. Stackiw, Ahluwalia and Delaat conducted an extensive review of the Virology Syllabus for input to the C.S.L.T.

Two CPL Staff were engaged in such a program. Paulette Carriere completed her requirements last October. The other candidate is being prepared for later examination.

LABORATORY ASSISTANTSHIP TRAINING:

The Division continued to conduct a 12-week program to train selected Registered Radiological Technologists in basic laboratory medicine. In this program candidates receive six weeks intensive didactic training at the Cadham Provincial Laboratory, followed by six weeks of guided practice in one of our rural Units. Two classes were conducted; 10 candidates graduated. We are indebted to Myrla Smederovak, Donna Robbins and Pat Redman, who conducted a large part of the didactic program.

INSERVICE TRAINING:

This area of training is categorized in six distinct formats:

1) Reviews on routine procedures by on-line staff, particularly to new staff and to summer students.

2) Introduction of new tests or instruments. This may involve:

a) Familiarization by a sales representative or senior staff.
b) A pre-test as a guide to basic relevant knowledge.
c) Practice under supervision and guidance of an instructor.
d) A practical test to demonstrate procedural competence.
e) A post-test to demonstrate an understanding of principles, applications and pitfalls.

3) Lectures or seminars presented montly by senior staff or invited guests, of broad topics of information for all laboratory sections, newly introduced in 1984.

4) Presentation and review of current articles by designated staff members.

5) Short programs that are sent to individuals or groups, and that can be learned on-site without help from an Instructor.

6) Formal programs that require indepth involvement and longer time commitments from both the participant and an instructor - e.g., re-training staff. Another such program is a correspondence course in urinalysis developed and administered by the Co-ordinator, which provided 28 lessons to 11 individuals.

Specific activities under categories 2, 3, and 4 are listed below. The numbers in brackets represent the number of staff in attendance at the respective session. All were one hour each unless otherwise indicated:

CPL Seminars:

WHO Approach to Radiological Services - Dr. Lansdowne	(41)
Cryptosporidiosis - Drs. Sekla, Mann	(20)
Rapid Virus Diagnosis - Dr. Hammond	(33)
Microbiology of Recreational Waters - Dr. Sekla	(92)
Antimicrobial Sensitivities: New and Old - Dr. Williams	(22)
The Prospective Payment System - Dr. Fox	(25)
Diagnosis by Nucleic Acid Hybrids - Dr. Hammond	(35)
Update on Intestinal Protozoa - Dr. Sekla	(41)
New Diagnostic Techniques in Microbiology - Dr. Williams	(23)

Other CPL Sessions:

Five Journal Reviews - various staff members	(109)
Pathologic Studies of the Franklin Expedition - Dr. Amy	(40)
Ultracentrifugation Update - Dr. Griffith - Beckman	(27)
- Mr. Kowebl - Sorvall	(15)
Water Purification - Millipore	(17)
Grab Hold of Today - CSC - Movie - 30 minutes	(55)
The Test of Leadership - CSC - Movie 30 minutes	(23)
Dealing with People - CSC - Movie - 15 minutes	(49)
Safety Seminar - Mr. A. Delaat - 2 hrs.	(15)

Rural Sessions:

Cancer Chemotherapy - Portage - 1 1/2 hr.	(5)
Antibiotic Update - Portage - 2 hours	(7)
Agassiz Academy - Seminars - 2 1/2 hours	(9)
Brandon Post Grad Course - 8 hours	(26)
Agassiz Academy - Workshop - Clin. Micro. - 6 hours	(10)
Surgical Swabs - Portage - 2 hours	(12)
Pembina Valley Academy - Seminar - 1 1/2 hr.	(9)
Advances in Hematology - Dauphin - 1 hr.	(7)
Blood Gas Seminar - Dauphin - 1/2 hr.	(7)
Routine Immunohematology - Dauphin - 4 hours	(12)
Blood and Blood Products - Flin Flon - 45 minutes	(11)
Semen Analysis - Flin Flon - 1 1/2 hr.	(4)
Microbiology - MiniCourse - Flin Flon - 1 1/2 hr.	(6)
CPR - Workshop - Flin Flon - 4 hours	(12)
RBC - Disorders - Flin Flon - 2 hours	(7)
QA - Seminar - Flin Flon - 1 hr.	(2)
Strep ID - Seminar - Flin Flon - 2 hours	(9)
Misc. - CSLT Programs - Flin Flon - 30'/e	(38)
Misc. - Movies - etc. - Flin Flon - 30'/e	(21)
Stress Workshop - Flin Flon - 2 hours	(7)
Blood Gas Seminar - Flin Flon - 1 1/2 hr.	(11)
Lymphocyte Identification - Flin Flon - 1 1/2 hr.	(8)
Viral Hepatitis - Selkirk - 1 hr.	(6)
CPR - Workshop - Swan River - 7 hours	(8)
Infectious Hepatitis - Swan River - 1 hr.	(3)
Genital Herpes - Swan River - 1 hr.	(3)
Misc. - Sessions - Swan River - 1 hr./e	(7)

EXTRAMURAL TRAINING FOR THE DIVISION

Several staff members received assistance to partake in extramural training programs, or supported themselves in such activities:

CACMID Meeting	Vancouver	35 hr.	(1)
Microcomputer Course, MB DITT	Winnipeg	3 hr.	(2)
Clinical Parasitology, U. of M.	Winnipeg	60 hr.	(1)
Clinical Virology, U. of M.	Winnipeg	60 hr.	(1)
Clinical Bacteriology, U. of M.	Winnipeg	120 hr.	(3)
Foodborne Illnesses, Tech. Serv.	Winnipeg	7 hr.	(1)
Clinical Chemistry, U. of M.	Winnipeg	60 hr.	(1)
Biostatistics, U. of M.	Winnipeg	60 hr.	(1)
Safety Seminars, MFL	Winnipeg	14 hr.	(1)
Professional Development, CSLT	Winnipeg	18 hr.	1
Epidemiology, U. of M.	Winnipeg	30 hr.	2
Microbial Physiology, U. of M.	Winnipeg	30 hr.	1
CSLT - Congress	Vancouver	30 hr.	3

Legend:

CACMID - Canadian Assocation of Clinical Microbiology and Infectious Diseases.
DITT - Dept. of Industry, Trades and Technology
U. of M. - University of Manitoba
MFL - Manitoba Federation of Labour
CSLT - Canadian Society of Laboratory Technologists

EXTRAMURAL TEACHING FROM THE DIVISION:

A number of our staff continued to contribute a significant amount of their time to teaching at the University of Manitoba Medical and Dental Faculties. These activities include lectures, seminars, tutorials, rounds and laboratory sessions in a variety of health-related programs. Two U. of M. Medical Microbiology Department post-graduate courses are conducted for Infectious Disease Fellows, external technologists, and post graduate students, and CPL Staff:

97.714 Clinical Parasitology - Co-ordinator and Instructor - Dr. L. Sekla

97:713 Clinical Virology - Co-ordinator and Instructor - Dr. G. Hammond.

Three graduate students are being supervised by our staff:

Dr. E. Mann, M.Sc. student, by Dr. Sekla
Mr. T. Scott-Taylor, Ph.D. student, by Dr. Hammond
Mrs. R. Kilani, Ph.D. student, by Dr. Sekla

Lab rounds have been introduced this year to review the medical use of diagnostic technology, specimen collection, and test interpretation. Twenty-one rounds were conducted at the CPL for infectious

disease fellows, residents, interns and medical students. The rounds were presented by: Messr. Stackiw, Klisko, Koschik, Ahluwalia, Barker, Milley and Kan, Drs. Maniar and Mann, and Mss. Eibisch, Dzogan, Giercke, and Miss Pugh.

Tours of and Visitations and Orientations to the CPL:

50 Water and Waste students visited the CPL, focussing on Environmental Microbiology. Conveners were Mr. Stackiw, Mrs. Dzogan, Ms. Pugh and Mrs. Winzinowich.

Dr. Nene Rush, an Infectious Disease Fellowship student, received extended training in Clinical Virology.

Many other presentations were delivered to outside groups. Some of the more noteworthy are:

Burroughs, M. W., Delaat, A. N. C., Hammond, G. W., Norrie, A., and Sekla, L. Diagnostic Services in Manitoba, A Telenetwork audio link to 50 North Dakota Hospitals, 1985.

Delaat, A. N. C. Professionalism and the Technologist. CSLT - Congress, Vancouver - 1984.

Delaat, A. N. C. Written Communications Workshops. Manitoba 85. Department of Development and Training, Winnipeg, 1984 and Thompson, 19

Fox, J. G. Prospective Payment Systems (DRG). Manitoba Department of Health, Winnipeg, 1984.

Hammond, G. W. Virus Infections and the Anaesthetist. Annual Convention, Canadian Anaesthetists Society, Winnipeg, 1984.

Hammond, G. W. Rapid Viral Diagnosis. Canadian Infectious Diseases Society, 1984 and Children's Hospital, Vancouver, 984.

Hammond, G. W. Nosocomial Spread of Enterovirus Infections. St. Amant Centre Medical Staff, Winnipeg, 1984.

Hammond, G. W. and Aoki, F. Y. Virus Infection in Pregnancy. Dept. of Obstetrics and Gynecology, Health Sciences Centre, 1984.

Law, B. and Hammond, G. W. Pediatric Respiratory Viral Infections. Pediatric Grand Rounds, U. of M., Winnipeg, 1984.

Phippen, D. E. But our Facility is Unique: Adapting Infection Control Guidelines. Alberta Hospital Association, Edmonton, 1984.

Sekla, L. Western Equine Encephalitis in Manitoba. Manitoba Entomological Society, Winnipeg, 1984.

Sekla, L. A review of parasitic pathology. Cytopathology Rounds, Winnipeg, 1984.

Sekla, L. Arbovirus Surveillance in Manitoba. Occupational and Preventive Medicine Section of the Manitoba Medical Association, Winnipeg, 1984.

Sekla, L. Computer in Medicine. Panel. Conference organized by Clinicom on Computer in Clinical practice, Winnipeg, 1984.

Sekla, L. Parasitology: A Review for Nurses. Several times during the year; Winnipeg, 1984-85.

Stackiw, W. Arbovirus Infections in Manitoba. Winnipeg Academy CSLT, 1984.

Stackiw, W. Serology: Tests and Interpretations. Pembina Valley Academy CSLT, Morden, 1984.

Stackiw, W. Clinical Virology. Red River Community College, 1984.

Stackiw, W. Water Microbiology. Waste and Waterwork School, Winnipeg, 1985.

ABSTRACTS PRESENTED FROM THE DIVISION:

1. Diaz-Mitoma, F., Ahluwalia, G., Lertzman, J., Hammond, G. W., Aoki, F. Y. Evaluaton of a Battery of Indirect Immunofluorescent-antibody Assays (IFA) for Rapid Diagnosis of Respiratory Infections in Hospitalized Children. Conjoint Meeting on Infectious Diseases, Vancouver, BC, November 28-30, 1984.

2. Sekla, L. Hepatitis B core antigen Antibody in Chronic and Acute Hepatitis B Infections. Chernesky, M., Castriciano, S., Mahony, J., Sekla, L., Bishai, F. and Vas, S. CACMID, Vancouver, 1984.

3. Hammond, G. W., Plummer, F. A., Forward, K., Sekla, L., Thompson, L. M., Anderson, M. J. An Erythema Infectiosum-like Illness Caused by Human Parvovirus Infection - presented at:

- Annual Meeting, Canadian Society for Clinical Investigation, Montreal, September 9-11, 1984.

- 24th Interscience Conference on Antimicrobial Agents and Chemotherapy, Washington, D.C., October 8-10, 1984.

4. Hammond, G. W., Lukes, H. Thompson, L., Mauthe, G., Duncan, V., Young, L., Hannan, C., Moodie, P., and Williams, T. W. The clinical, epidemiological and laboratory spectrum of adenovirus gastroenteritis - presented at:

- 3rd Annual Meeting, American Society for Virology, Madison, Wisconsin, July 23-26, 1984.

- Annual Meeting, Canadian Society for Clinical Investigation, Montreal, September 9-11, 1984.

5. Kinney, J. S., McCray, E., Kaplan, J. E., Harding, G. K. M., Hammond, G. W., Riben, P., Low, D. E. Risk Factors Associated with Development of Echovirus 11' Illness During an Outbreak in a Newborn Nursery. Canadian Infectious Disease Society Meeting, Montreal, September 10-13, 1984.

6. Maniar, A. C., Williams, T. W., Hammond, G. W. Detection of Chlamydia trachomatis in Smears of Clinical Materials with Fluorescein-Conjugated Monoclonal Antibodies. 85th Annual Meeting of the American Society for Microbiology, Las Vegas, Nevada, March 3-7, 1985.

7. Sekla, L. Cryptosporidiosis in Manitoba. CACMID, Vancouver, 1984.

VOCATIONAL GUIDANCE:

Various staff members participated in career day activities at a number of high schools throughout the Province and at Regional Career Symposia, Winnipeg, Dauphin, Selkirk, Portage, Winkler, and Stonewall. Career guidance was also provided to various staff members, summer students, and to one student from St. Anne, who spent two days at the CPL.

PUBLICATIONS FROM THE DIVISION:

1. Conly, J., Sekla, L., Low, D. "Dirofilariasis presenting as a breast lump". Canadian Medical Associate Journal. 130:1575-1576.

2. CPL - Guide to Services, 1984 Edition.

3. Delaat, A. N. C. Microbiology for the Allied Health Professions, 3rd Edition, Leah Febiger, Philadelphia, 1984.

4. Hammond, G. W., Ahluwalia, G. S., Hazelton, P. R. Detection of Human Fecal Rotaviruses by a Commercial Latex Agglutination Test. J. Infect. Diseases. 149: 1021, 1984.

5. Hammond, G. W. and Cheang, M. Absenteeism among hospital staff during an influenza epidemic: implications for immunoprophylaxis. Can. Med. Assoc. J. 131: 449-452, 1984.

6. Hammond, G. W., Lukes, H., Wells, B., Thompson, L., Low, D. E., Cheang, M. Maternal and Neonatal Neutralizing Antibody Titers to Selected Enteroviruses. J. Ped. Infect. Dis. 4(1): 32-35, 1985.

7. Maniar, A. C., and Williams, T. W. Fluorescent Antibody Restaining Technique for Chlamydia trachomatis, Public Health Lab., 42: 112-114, 1984.

8. Mann, E., Sekla, L., Koschik, C., Nayar, G. "Cryptosporidosis in Manitoba. CDWR. Vol. 10 - 42, Page 164, 1984.

9. Phippen, D. E. and Williams, T. Manitoba Rural Hospitals Curtail Nosocomial Infection, Dimension, 61: No. 9, 26, 1984.

10. Sekla, L. and Eadie, J. "Manitoba Arbovirus Surveillance, 1983". CDWR. Vol. 10 - 24, 94-95, 1984.

11. Sheehan, G., Sekla, L., Harding, G. "Urinary Schistosomiasis: A Report of four cases and a review. Can. Medical Association Journal. 131: 1361-1365, 1984.

EDUCATION - RADIOLOGY

R.T. Training

The Manitoba Health Services Commission X-ray Training School continued its program of training candidates for Registration with the Canadian Association of Medical Radiation Technologists. The program involves 25 months of X-ray Training plus 3 months of Laboratory Assistant Training.

During the 1984/85 fiscal year six candidates were successful in passing the registration examination, and five candidates who were successful in their first year of clinical experience in rural and city hospitals.

Four additional students are currently enrolled in the theoretical portion of the program at Red River Community College. This is the first class to be involved in the newly revised program which involves two four-month blocks of theory at R.R.C.C. separated by a one month block of clinical practice at the hospital. The students then return to the hospitals straight through to the end of the 25 months for a final block of clinical practise.

The Medical Directorship of Training changed hands again this year, and Dr. Rob Lloyd of the Southern Region has kindly accepted this appointment.

X-Ray Training

The Laboratory and X-ray Unit Systems sponsored selected Registered Medical technologists in a four-month X-ray Assistant Course. This course is designed to train the individuals to assist Radiological Technologists in covering emergency call-back sitautions in smaller rural hospitals.

Due to the change in the R.T. training program, the Assistant program was changed from the spring to the fall. Consequently two classes graduated in 1984/85 with a total of nine candidates successfully passing the course.

In-service Training

A number of in-service seminars and workshops were organized and delivered by Regional Supervisors, Area Chief Technologists, Radiologists and the Technical Instructor.

The following topics were covered at the respective locations with the figures in brackets representing the number of individuals attending.

Dauphin

The Chest	1 1/4 hours	(5)
The WHO Report	1 hour	(5)
Absenteeism	1/2 hour	(7)
C.T.	1 hour	(9)

Brandon

Radiation Dose Monitoring	1 hour	(4)
Effective Communication	1 hour	(7)
Maraging Stress	1 hour	(7)

Portage

Chest and Abdomen	2 hours	(4)

Swan River

Facial Bones	1 hour	(4)

Morden

Colon Anatomy and Pathology	2 hours	(15)
Facial Bones	2 hours	(14)

Winkler

Chest Radiology	2 hours	(16)
Imaging G.U. Tract	2 hours	(12)

In addition, approximately 25 technologists attended between one and five days of lectures on various topics at the C.A.M.R.T. Annual Conference in Winnipeg, June 1984.

Notably, two technologists, Shelley Mitchell (nee Wild) and Lynne Savage obtained Advance Certification with the Canadian Association of Medical Radiation Technologists. Also, several other technologists are working on or have completed correspondence courses in Pathology and Cross-sectional Anatomy.

Electrocardiography

One of our staff technologists, Lois Wales, gave 10 hours of lectures at R.R.C.C. on Basic Interpretations of Electrocardiograms.

Ten technologists attended a one day workshop on Basic ECG skills, sponsored by Burdick ECG machines and Stevens and Sons Ltd.

HOSPITAL INFECTION DISEASE CONTROL PROGRAM

Inservice training sessions were conducted by Ms. Phippen at various locations throughout Manitoba, in hospitals and personal care homes, and to three non-facility groups. In all, 70 sessions were attended by a total of 1,020 individuals. Topics ranged from: General Infection Control; Isolation Techniques; Urinary Tract Infections; Infectious Diarrhea; Shock.

In addition, three two-day workshops were conducted at the CPL to a total of 46 personnel from personal care homes, and four two day workshops to a total of 41 hospital nurses.

Seven issues of "Mighty Microbes", an ID-Newsletter, were produced and distributed.

Ms. Phippen spoke at the Alberta Hospital Association Conference and attended the MHO Convention as well as a Foodborne Diseases Workshop.

MANITOBA ADVISORY COMMITTEE ON INFECTIOUS DISEASES (MACID)

A brief summary of activities of the MACID Committee will be included beginning in this year's report, as the overview of Public Health Communicable Diseases reflects a central activity of the Division.

On June 29th, 1984 a meeting was held to discuss the above noted committee.

Background

- established in the 1940's under the Provincial Epidemiologist to review the problem of poliomyelitis.

- committee has the Minister of Health's "blessing" but is not a ministerial committee.

- a consistent goal has been communication between different groups represented on the committee.

Membership

There was agreement that the following be regular members:

1. All members of CPL/Preventive Medical Services (PMS) committee:

    a) Provincial Epidemiologist - Dr. J. Eadie
    b) Assistant Provincial Epidemiologist - Dr. M. Fast
    c) Chief Medical Officer of Health - Dr. S. MacDonald
    d) Director, Cadham Provincial Laboraotry - Dr. G. Hammond (Chairman).
    e) Assistant Directors - Cadham Provincial Laboratory - Dr. L. Sekla, Dr. T. Williams, and Dr. J. Fox.
    f) Head, Dept. of Medical Microbiology, U. of Manitoba - Dr. A. R. Ronald.

2. City of Winnipeg Health Department representatives - Dr. D. Gemmill and Dr. D. Luckhurst.

3. Federal Medical Services representatives - Dr. P. Talbot and Dr. T. Jolly.

4. Director, Northern Medical Unit and Community Medicine - Dr. B. Postl.

5. Department of Paediatrics - Dr. B. Law.

6. Head, Infectious Diseases, St. Boniface General Hospital - Dr. G. Harding.

7. Assistant Deputy Minister of Health - Dr. J. C. Wilt.

8. Dr. H. Medovy.

Other individuals were to be invited for specific topics.

Time and Frequency of Meetings

1200-1400 hours, the first Friday of each month (excluding July, August, and September).

Terms of Reference

1. Program review and planning advice, originating from any of the committee members.

2. Advice on policy issues with follow up.

3. Information exchange.

On October 5th, 1984 a MACID meeting was held to discuss topics, discussants and dates of upcoming meetings. The topic Influenza Surveillance and Prevention was discussed by Dr. G. Hammond. Recommendations included the continuation of the present surveillance system, and a review of the influenza immunization program.

On November 2nd and December 7th, 1984, the topic was "New Guidelines for STD Management in Manitoba with emphasis on Chlamydia trachomatis infections", by Drs. C. Greensmith, G. Harding, and Ms. P. Matusko. This topic was also carried over to the next meeting due to its complexity. The following recommendations were made: continue laboratory diagnosis; make C. trachomatis nonspecific urethritis/ mucopurulent cervicitis reportable; the present target groups for laboratory study should be symptomatic cases and their contacts; a treatment protocol for males and females with mucopurulent urethritis and cervicitis was established, which involved a history and physical examination, Gram stain and culture for G.C. and detection of Chlamydia (treatment protocols included tetracycline in addition to penicillin or tetracycline alone depending on the Gram stain results); MicroTrak was recognized as a suitable method to diagnose C. trachomatis from genital sites; no guidelines for surveillance of potential high risk groups were made, and the MicroTrak test was not recommended for surveillance testing.

The January 4th, 1985 topic was Hospital Infection Control Programs - Urban and Rural, Dr. A. R. Ronald and Dr. T. Williams. Dr. Ronald reviewed the programs of the large hospitals. He raised the question of the role of PMS in hospital infections and of interested persons at the local level to those at the federal level. Hospital infections were discussed on the basis of priorities, incidence, cost, administration of controls, control programs, staffing, national and international consulting bodies. Suggestions for involvement of PMS were made. Dr. Williams outlined the organization of the control

measures in rural Manitoba. It appears that Manitoba is in a leadership role in establishing guidelines for use in smaller rural hospitals. Recommendations included the review of state-wide programs of hospital infection control practices in Virginia (Dr. Eadie) and follow up to the Canadian Hospital Infection Control Association (CHICA) for their input and possible interest in Manitoba programs (Dr. Hammond).

On February 1, 1985 the topic was Western Equine Encephalitis - Where do we go from here?, by Dr. J. C. Wilt. Dr. Wilt reviewed the Manitoba program to date and gave a detailed account of the 1984 experience. The support for continuation of the WEE surveillance system was acknowledged. Dr. Wilt indicated that we should look to finding the answers for some of the following issues; virus virulence factors, factors or combination of factors that precipitate an epidemic, objective terms for predictive criteria, more selectivity of surveillance, funding for research vs. routine surveillance, priorities and strategies for research.

Also, on February 1st, 1985, Update on Syphilis - Manitoba Objectives, Ms. P. Matusko and Dr. G. Harding, discussed the increase in infectious syphilis in Manitoba in 1984 with a shift to the heterosexual population.

On March 1, 1985 the topic was Public Health Aspects of the Winnipeg Water Supply, Dr. D. Gemmill and Dr. D. Luckhurst. A presentation on the mechanics of water delivery and purification for the City of Winnipeg was made. The implications of a cottage development site on Shoal Lake were explained. Baseline activity in Shoal Lake re: viruses and parasites is now being monitored.

The topic of March 29th (and May 3rd, 1985) was Hepatitis B and Hepatitis B Vaccine. A scholarly presentation on Hepatitis B disease and Hepatitis B vaccine was given by a community medicine resident, Dr. L. Poffenroth. A discussion on pre-vaccination screening and the proper course to follow both in this regard and in the administration of vaccine to staff at the Manitoba Development Centre ensured. Recommendations included that pre-vaccination screening not be routinely carried out, and that the Department of Health review institutional requests for hepatitis B vaccine. A priority list of hepatitis B vaccine candidate groups was developed.

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TABLE I

LABORATORY AND X-RAY SERVICES DIVISION
WORKLOAD IN STATISTICS CANADA UNITS
APRIL 1, 1984 - MARCH 31, 1985
WITH COMPARISON TO 1983-1984

RURAL LABORATORY & X-RAY UNITS	1983-1984 NO. OF EKG'S	1983-1984 NO. OF X-RAY EXAMS	1983-1984 STATISTICS CANADA UNITS	1984-1985 NO. OF EKG'S	1984-1985 NO. OF X-RAY EXAMS	1984-1985 STATISTICS CANADA UNIT
RUSSELL AREA	2,505	7,059	684,027	2,799	7,012	741,284
DAUPHIN AREA	10,054	29,502	2,438,977	9,957	28,311	2,408,212
NEEPAWA AREA	4,278	15,184	1,251,975	4,384	14,545	1,267,721
PORTAGE AREA	4,738	17,301	1,461,091	4,725	17,931	1,392,824
KILLARNEY AREA	4.562	15,504	1,283,459	4,185	14,960	1,256,655
MORDEN AREA	6,738	25,591	2,332,664	6,632	25,231	2,392,608
SELKIRK AREA	5,726	23,521	1,511,007	5,934	29,074	1,685,537
SWAN RIVER AREA	2,746	9,685	749,764	2,280	9,298	691,659
GIMLI AREA	2,963	11,671	863,581	3,363	12,470	949,176
VIRDEN AREA	4,328	14,240	1,239,221	4,636	13,721	1,248,069
SPECIAL AGREEMENT UNITS	12,669	59,018	4,488,200	13,761	60,833	4,607,505
TOTAL RURAL	61,307	228,276	18,303,966	62,656	229,386	18,641,250

CADHAM PROVINCIAL LABORATORY	1983-1984 NO. OF SPEC'S.	1983-1984 NO. OF TESTS	1983-1984 STATISTICS CANADA UNITS	1984-1985 NO. OF SPEC'S.	1984-1985 NO. OF TESTS	1984-1985 STATISTICS CANADA UNITS
CLINICAL MICRO-BIOLOGY	77,639	NOT RE-CORDED	1,511,486	82,146	106,630	1,516,713
MEDIA	-	-	318,985	-	-	294,591
VIRUS DETECTION*	14,195	15,032	1,907,940	14,737	20,499	732,201
ENVIRONMENTAL MICROBIOLOGY	54,307	96,954	2,315,386	47,487	104,687	1,636,136
SEROLOGY/ PARASITOLOGY	25,159	289,356	4,155,614	109,026	248,875	3,888,076
METABOLIC DISEASES	33,310	164,488	682,525	32,833	153,150	797,300
CHEMISTRY	7,878	15,232	83,678	12,309	18,820	116,182
TOTAL CPL	312,488	-	10,975,614	298,538	652,661	8,981,199
TOTAL SC UNITS LAB & X-RAY DIV.			29,279,580			26,622,449

* The Virus Detection Section's unit workload values were completely revised for 1984/85.

TABLE II

RURAL LAB & X-RAY UNITS SYSTEM - APRIL 1ST, 1984, TO MARCH 31ST, 1985

UNIT	X-RAY EXAMINATIONS			X-RAY S.C. UNITS			LAB S.C. UNITS			E.C.G.'S		
	TOTAL	IN/PAT	O/PAT	TOTAL	IN/PAT	O/PAT	TOTAL	IN/PAT	O/PAT	TOTAL	IN/PAT	O/PAT
RUSSELL	3,170	817	2,353	95,010	33,648	61,362	262,226	107,328	154,898	1,023	419	604
BIRTLE	1,930	306	1,624	52,870	10,335	42,535	240,434	64,049	176,385	950	351	599
ROSSBURN	711	192	519	19,576	5,967	13,609	75,794	32,725	43,069	283	153	130
SHOAL LAKE	1,201	306	895	33,313	9,411	23,902	162,830	58,225	104,605	543	280	263
DAUPHIN	16,686	4,232	12,454	658,813	177,260	481,553	1,382,635	495,042	887,593	6,220	2,091	4,129
GILBERT PLAINS	577	69	508	15,341	2,279	13,062	59,318	11,561	47,757	219	34	185
GRANDVIEW	1,340	240	1,100	38,191	8,553	29,638	96,959	31,570	65,389	437	136	301
MCCREARY	1,423	300	1,123	41,159	9,413	31,746	110,260	42,321	67,939	520	184	336
ROBLIN	3,224	756	2,468	95,379	26,821	68,558	375,454	180,117	195,337	1,266	721	545
STE. ROSE	3,699	1,066	2,633	109,540	35,881	73,659	271,197	170,953	100,244	833	545	288
WINNIPEGOSIS	1,362	482	880	36,959	13,837	23,122	112,389	66,027	46,362	462	292	170
NEEPAWA	6,614	1,294	5,320	226,318	43,955	182,363	599,328	208,688	390,640	2,141	835	1,306
CARBERRY	2,400	453	1,947	64,901	11,750	53,151	220,639	67,381	153,258	807	238	569
ERICKSON	507	115	392	13,686	3,937	9,749	61,579	21,008	40,571	174	44	130
GLADSTONE	1,650	212	1,438	51,183	7,383	43,800	181,887	37,515	144,372	378	96	282
MINNEDOSA	3,374	741	2,633	117,656	27,223	90,433	204,288	90,252	114,036	884	416	468
PORTAGE	13,375	2,644	10,731	464,321	105,022	359,299	1,007,494	332,143	675,351	3,631	1,256	2,375
MACGREGOR	557	136	421	15,387	5,051	10,336	34,081	19,625	14,456	261	77	184
MANITOBA SCHOOL	1,352	1,352	-	38,987	38,987	-	84,668	-	84,668	173	-	173
NOTRE DAME	468	140	328	13,199	4,902	8,297	54,014	13,027	40,987	111	45	66
ST. CLAUDE	639	202	437	18,603	7,552	11,051	60,647	26,634	34,013	265	109	156
TREHERNE	1,540	205	1,335	59,190	9,729	49,461	151,920	53,225	98,695	284	79	205
KILLARNEY	4,854	1,037	3,817	168,731	39,770	128,961	356,550	126,898	229,652	949	354	595
BALDUR	495	163	332	15,800	6,673	9,127	51,058	24,607	26,451	199	112	87
BOISSEVAIN	2,101	488	1,613	58,428	15,632	42,796	208,312	74,904	133,408	983	437	546
CARTWRIGHT	258	24	234	6,268	704	5,564	22,024	5,787	16,237	50	7	43
CRYSTAL CITY	2,273	502	1,771	66,410	16,854	49,556	227,124	83,313	143,811	768	407	361
DELORAINE	2,920	399	2,521	94,943	15,918	79,025	214,176	68,873	145,303	709	180	529
MELITA	2,059	386	1,673	57,088	14,336	42,752	177,411	57,809	119,602	527	242	285
MORDEN	5,074	1,343	3,731	172,457	50,175	122,282	597,023	202,626	394,397	1,235	654	581
ALTONA	3,101	497	2,604	103,762	16,661	87,101	226,444	66,746	159,698	623	197	426
CARMAN	4,193	1,170	3,023	143,546	42,062	101,484	326,335	123,152	203,183	796	346	450
EMERSON	1,067	254	813	27,387	6,663	20,724	94,223	30,087	64,136	402	97	305
MANITOU	782	192	590	20,642	6,662	13,980	47,278	15,391	31,887	229	85	144
MORRIS	2,592	541	2,051	72,593	17,773	54,820	352,712	125,347	227,365	1,076	435	641
SWAN LAKE	3,595	578	3,017	129,910	26,365	103,545	406,683	103,220	303,463	1,259	234	1,025
WINKLER	4,827	1,508	3,319	248,270	64,905	183,365	341,910	178,589	163,321	1,012	792	220
SELKIRK	12,642	2,163	10,479	428,837	78,669	350,168	888,848	301,918	586,930	3,056	1,056	2,000
BEAUSEJOUR	5,022	895	4,127	176,519	36,051	140,468	228,557	152,284	76,273	670	518	152
LAC DU BONNET	1,036	-	1,036	26,884	-	26,884	81,162	-	81,162	375	-	375
PINAWA	1,640	294	1,346	58,591	11,913	46,678	165,363	56,116	109,247	570	352	218
PINE FALLS	3,269	807	2,462	91,645	23,088	68,557	286,199	134,572	151,627	1,012	533	479
SELKIRK M.H.C.	863	863	-	26,014	26,014	-	-	-	-	-	-	-
WHITEMOUTH	602	239	363	18,024	9,142	8,882	35,408	19,813	15,595	251	129	122
SWAN RIVER	9,038	1,831	7,207	299,067	60,872	238,195	672,462	262,771	409,691	2,151	853	1,298
BENITO	260	66	194	8,259	2,161	6,098	19,197	7,259	11,938	129	38	91
GIMLI	3,392	624	2,768	120,811	28,636	92,175	310,718	76,767	233,951	1,280	429	851
ERIKSDALE	1,789	283	1,506	52,164	10,679	41,485	84,762	31,913	52,849	173	81	92
RIVERTON	221	-	221	5,204	-	5,204	-	-	-	-	-	-
STONEWALL	3,161	498	2,663	89,208	18,482	70,726	242,026	75,542	166,484	954	293	661
TEULON	3,907	665	3,242	126,843	22,434	104,409	311,670	106,963	204,707	956	370	586
VIRDEN	3,788	702	3,086	126,163	26,966	99,197	365,906	101,299	264,607	1,359	477	882
BRANDON M.H. C.	1,462	1,075	387	36,166	26,757	9,409	-	-	-	-	-	-
HAMIOTA	2,525	440	2,085	78,889	13,334	65,555	354,264	107,895	246,369	1,201	383	818
RESTON	751	169	582	22,152	6,512	15,640	72,390	26,092	46,298	290	84	206
RIVERS	1,212	164	1,048	31,768	4,547	27,221	149,773	31,848	117,925	517	89	428
SOURIS	3,983	865	3,118	132,143	30,304	101,839	305,736	124,649	181,087	1,269	390	879
ARBORG	2,413	487	1,926	64,149	16,598	47,551	134,213	70,519	63,694	373	264	109
ASHERN	1,519	158	1,361	38,776	5,037	33,739	113,290	32,402	80,888	334	78	256
CHURCHILL	2,143	641	1,502	65,218	20,524	44,694	531,599	197,135	334,464	1,074	450	624
FLIN FLON	13,757	2,948	10,809	391,262	91,511	299,751	1,014,807	466,903	547,904	4,235	1,531	2,704
GILLAM	1,131	150	981	32,531	5,122	27,409	111,790	20,104	91,686	277	91	186
GLENBORO	678	157	521	18,824	5,381	13,443	52,873	14,789	38,084	349	129	220
LEAF RAPIDS	1,032	73	959	29,329	2,195	27,134	84,988	10,297	74,691	127	26	101
LYNN LAKE	1,217	254	963	41,077	10,513	30,564	105,849	48,001	57,848	148	62	86
ST. PIERRE	3,649	745	2,904	128,630	32,377	96,253	175,453	75,604	99,849	818	376	442
STE. ANNE	4,028	598	3,430	152,088	22,877	129,211	139,521	73,905	65,616	526	358	168
SNOW LAKE	1,035	60	975	26,009	1,393	24,616	71,578	9,587	61,991	140	35	105
STEINBACH	8,405	1,556	6,849	301,118	61,415	239,703	600,719	218,184	382,535	2,240	798	1,442
THE PAS	17,811	3,564	14,247	599,013	123,748	475,265	1,322,689	680,509	642,180	2,462	973	1,489
VITA	954	147	807	24,282	4,106	20,176	58,858	17,826	41,032	217	92	125
WANANESA	1,061	137	924	27,040	3,955	23,085	89,278	13,282	75,996	441	87	354

TOTAL LAB S. C. UNITS	-	18,641,250	IN/PAT -	6,983,513	OUT/PAT -	11,657,737
TOTAL X-RAY EXAMINATIONS	-	229,386	IN/PAT -	49,660	OUT/PAT -	179,726
TOTAL X-RAY S. C. UNITS	-	7,560,514	IN/PAT -	1,783,362	OUT/PAT -	5,777,152
TOTAL E.C.G. EXAMINATIONS	-	62,656	IN/PAT -	24,405	OUT/PAT -	38,251

TABLE III

RURAL LABORATORY AND X-RAY UNITS
ULTRASOUND STATISTICS
1984-1985

UNIT	IN-PATIENT	OUT-PATIENT	TOTAL
WINKLER	137	1,981	2,118
DAUPHIN	286	2,032	2,318
SWAN RIVER	20	195	215
THE PAS	331	1,598	1,929
STEINBACH	23	166	189
TOTAL	797	5,972	6,769

TABLE IV

CADHAM PROVINCIAL LABORATORY
CLINICAL MICROBIOLOGY ISOLATES
1984/85
With Comparison to 1983/84

A. RESPIRATORY	NUMBER OF ISOLATES 1983/84	1984/85
C. diphtheria:		
gravis toxigenic	67	67
gravis non-toxigenic	21	5
mitis toxigenic	2	8
mitis non-toxigenic	116	88
B. pertussis	8	1
Acid Fast Bacilli		
positive culture	67	86
positive smears	22	17
Legionella:		
L. pneumophila	1	1
L. bozemanii sero. 1	1	0
L. jordanis	1	0

B. MYCOLOGY	NUMBER OF ISOLATES 1983/84	1984/85
Presumptive Tinea versicolor	30	13
Candida albicans	798	995
Yeast, not C. albicans	125	121
Dermatophytes	48	39
Coccidioides immitis	1	0

C. STD	NUMBER OF ISOLATES 1983/84	1984/85
N. gonorrhoea	1358	1496
C. trachomatis	703	1133
T. vaginalis	221	354
G. vaginalis	1778	2218

CLINICAL MICROBIOLOGY (continued)

D. MISCELLANEOUS	NUMBER OF ISOLATES 1983/84	1984/85
C. difficile non-toxigenic	60	150
C. difficile toxigenic	63	68
Streptococcus Group A	2014	2406
Streptococcus Group B	1069	1349
N. meningitidis	18	17
B. melitensis	3	0
L. monocytogenes	2	0
H. ducreyi	1	0

E. ENTERICS	NUMBER OF ISOLATES 1983/84	1984/85
Escherichia Coli Group:		
06:NM	1	0
08:K25	0	1
026:K60	8	9
055:K59	32	31
086a:K61	6	13
0111:K58	28	21
0113:K75	1	0
0119:K69	6	0
0125:K70	20	17
0126:K71	18	32
0127a:K63	1	4
0128:K67	20	37
0142:K86	0	1
non-enteropathogenic	27	29
"rough", untypable	2	0
Campylobacter fetus ss jejuni	186	151
Yersinia enterocolitica	26	13
Aeromonas hydrophila	235	240
Plesiomonas shigelloides	9	0
Shigella:		
S. boydii 2	0	1
S. flexneri 1	2	2
S. flexneri 2	46	29
S. flexneri 4	5	0
S. flexneri 6	0	12
S. flexneri X	0	1
S. flexneri Y	1	1
S. sonnei	597	788

CLINICAL MICROBIOLOGY (continued)

E. ENTERICS (continued)	NUMBER OF ISOLATES 1983/84	1984/85
Salmonellae:		
S. Group B undifferentiated	1	0
S. agona	55	11
S. brandenburg	2	5
S. heidelberg	24	35
S. paratyphi B	0	3
S. saint paul	9	8
S. schwarzengrund	25	43
S. typhi	6	4
S. typhimurium	94	218
S. bareilly	1	2
S. infantis	10	7
S. montevideo	9	3
S. thompson	21	9
S. haardt	0	1
S. litchfield	1	0
S. muenchen	38	8
S. newport	32	17
S. enteriditis	26	18
S. havana	1	0
S. cerro	4	0
S. albany	0	3
S. rubislow	3	0
S. bredeney	5	3
S. hadar	2	3
S. ohio	1	0
S. panama	2	0
S. java	8	2
S. london	3	2
S. cremieu	1	0
S. othmarschen	1	0
S. oranienburg	2	2
S. haifa	0	1
S. lomita	0	1
S. kottbus	0	2
S. stanley	0	1
S. oritamerin	0	1
S. johannesburg	1	7
S. mbanka	1	1
S. java monophasic	1	0
S. non-motile	1	0
S. krefeld	2	0
S. derby	2	1
S. untypable	7	6
S. miami	7	0
S. bovis morbificans	0	1
S. paratyphi A	2	3
S. san diego	1	0
S. Subgroup IV	3	0
S. species	15	13
S. non-typable	0	3

F. RESULTS OF ANTIMICROBIAL SENSITIVITY TESTING

	Tested	Penicillin	Clindamycin	Erythromycin	Methicillin	Cefotaxime	Cefoxitin	Cephalothin	Nitrofurantoin	Chloramphenicol	Nalidixic Acid	Co-Trimoxazole	Tetracycline	Ampicillin	Amikacin	Tobramycin	Netilimicin	Gentamicin	Piperacillin	Carbenicillin
Acinetobacter anitratus	57							96	100		0	0	16	89				2		
Acinetobacter lwoffi	104							79	89		0	22	3	18				1		
Aeromonas hydrophila	212							59	0	0	0	10	5	95				0		
Citrobacter diversus	14							14	22		0	0	0	100				0		
Citrobacter freundii	74							56	11		4	30	22	69				1.5		
Enterobacter aerogenes	23							57	64		0	7	0	96				0		
Enterobacter agglomerans	69							46	42		21	26	22	61				0		
Enterobacter cloacae	118							92	37		0	11	15	86				2		
Escherichia coli	2,726					0	0	28	4	0	3	25	21	54	0	0	0	<1	67	38
Klebsiella ozaenae	22							32	33	0	8	21	9	96				0		
Klebsiella oxytoca	117							6.8	10	0	3	4	3	98				<1		
Klebsiella pneumoniae	288							5	42	0	6	10	12	99	0					100
Morganella morganii	42							95	95		0	10	31	95				0		
Moraxella sp.	48							17	43		14	43	2	21				6		
Plesiomonas shigelloides	12							0	0	0		0	0	92				8		
Proteus mirabilis	225							2	97	0	11	9	99	36			0	1		
Proteus vulgaris	25					0	0	100	92		0	15	68	92			0	12	0	0
Pseudomonas aeruginosa	183							67									0	5	50	14
Pseudomonas cepacia	20					17	100	100							100	100	80	2	8	57
Salmonella heidelberg	20							15		0		0	20	20				0		
Salmonella schwarzengrund	33							0		0		3	6	0				0		
Salmonella typhimurium	117							5	10	10		15	19	15				0		
Serratia marcescens	24							100	100		0	0	88	100				0		
Shigella flexneri	29							33	32			33	50	70				0		
Shigella sonnei	537							16	44	<1	0	82	2	95				0		
Yersinia enterocolitica	11							73	0	0		0	0	100				0		
Staphylococcus aureus	2,363	92	1	8	<1			<1										4		
Staphylococcus epidermidis	895	59	6	23	5			2										6		
Staphylococcus saprophyticus	120	68	3	54	28			10	7			100						4		
Streptococcus faecalis	395			28				67				15	65	3				20		

TABLE V

CADHAM PROVINCIAL LABORATORY
VIRUS ISOLATIONS
1984-1985
with comparison to 1983-1984

VIRUS ISOLATIONS	1983-1984	1984-1985
ADENOVIRUS		
ADENOVIRUS 1	31	18
ADENOVIRUS 2	17	21
ADENOVIRUS 3	18	39
ADENOVIRUS 4	5	10
ADENOVIRUS 5	5	12
ADENOVIRUS 6	2	9
ADENOVIRUS 7	34	33
ADENOVIRUS NOT TYPED	1	4
COXSACKIE		
COXSACKIE A9	2	13
COXSACKIE B3	13	3
COXSACKIE B5	8	58
HERPES		
VARICELLA ZOSTER	30	25
CYTOMEGALOVIRUS	42	58
HERPESVIRUS	-	25
HERPES SIMPLEX	1378	1453
HERPES SIMPLEX 01	10	3
HERPES SIMPLEX 02	6	5
ECHOVIRUS		
ECHOVIRUS 11	43	3
ECHOVIRUS 12	-	1
ECHOVIRUS 16	-	3
ECHOVIRUS 22	47	30
CORONAVIRUS	-	6
INFLUENZA A	32	33
INFLUENZA B	4	35
PARAINFLUENZA 02	6	8
PARAINFLUENZA 03	21	31
POLIOVIRUS		
POLIOVIRUS 01	24	24
POLIOVIRUS 02	33	29
POLIOVIRUS 03	22	17
POLIOVIRUS NOT TYPED		

VIRUS ISOLATIONS (Cont'd)	1983-1984	1984-1985
ENTEROVIRUS	-	1
MOLLUSCUM CONTAGIOSUM	1	2
POXVIRUS	3	2
ROTAVIRUS	189	143
RESPIRATORY SYNCYTIAL VIRUS	23	17
SMALL ROUND ENTERIC VIRUS	66	9
REOVIRUS 1	-	1
REOVIRUS 2	-	1

TABLE VI

CADHAM PROVINCIAL LABORATORY
1984-85
VIRUSES DETECTED BY SPECIAL TECHNIQUES

VIRUS	ELECTRON MICROSCOPY	CULTURE & ELECTRON MICROSCOPY	FLUORESCENT MICROSCOPY	CULTURE & FLUORESCENCE MICROSCOPY	LATEX AGGLUTINATION
ADENOVIRUS	-	6	2	2	-
CYTOMEGALOVIRUS	2	-	1	7	-
CORONAVIRUS	6	-	-	-	-
ECHOVIRUS	1	-	-	-	-
INFLUENZA A	-	-	-	2	-
INFLUENZA B	-	-	-	3	-
HERPESVIRUS	17	8	-	-	-
HERPES SIMPLEX	2	1	26	8	-
MOLLUSCUM CONTAGIOSUM	2	-	-	-	-
PARAINFLUENZA	-	-	1	18	-
POLIOVIRUS	2	-	-	-	-
POXVIRUS	2	-	-	-	-
ROTAVIRUS	71	-	-	-	73
RESP. SYNC. VIRUS	1	-	3	10	-
SMALL ROUND ENTERIC	9	-	-	-	-

TABLE VII

CADHAM PROVINCIAL LABORATORY
SEROLOGY STATISTICS

SYPHILIS SEROLOGY

A. Workload

	1983-1984		1984-1985	
	Number of Specimens	Number Reactive	Number of Specimens	Number Reactive
Bloods	71,960	851	54,757	961
CSF	458	10	531	8
IFA	42	0	44	2

B.

Number of Persons Reactive with previous history		Number of new cases		Number of new cases in registry	
1983-1984	1984-1985	1983-1984	1984-1985	1983-1984	1984-1985
743	814	23	86	85	61

BACTERIAL AND MISCELLANEUS SEROLOGY

	Number Tested	Number Positive	Positive Percent	Number Tested	Number Positive	Positive Percent
Widal	129	21	16.3	219	34	15.5
Brucella abortus	386	23	6.0	522	18	3.5
Pasteurella tularensis	33	4	12.1	43	2	4.7
Thyroglobulin antibody	108	14	13.0	280	13	4.7
Microsomal antibody	108	31	28.7	284	64	22.5
Antinuclear factor	199	14	7.0	1,055	27	2.6
Rheumatoid factor	1,546	120	7.8	2,322	156	6.7
CRP	239	81	33.9	349	153	43.8

RUBELLA SEROLOGY

A. Number of Rubella Tests

	1983-1984	1984-1985
PHA	34,199	28,210
HI	6,084	3,100
IgM	483	167

B. Details of Prenatal Surveillance

	1983-1984			1984-1985		
Test	Number Tested	Susceptible	Percent	Number Tested	Susceptible	Percent
PHA	17,157	592	3.5	15,043	427	2.8

C. Details of Rubella Diagnostic Testing

1.

	1983-1984			1984-1985		
Test	Number Tested	Number with 4 fold Rise	Percent	Number Tested	Number with 4 fold Rise	Percent
HI	4,289	143	3.3	1,896	9	0.5

Test	Number Tested	Number with IgM Present	Percent	Number Tested	Number with IgM Present	Percent
IgM	483	114	23.6	167	4	2.4

IMMUNE STATUS SEROLOGY

	1983-1984	1984-1985			
	Number Tested	Number Tested	Susceptibility Level	Number Susceptible	Percent Susceptible
Measles	1,983	925	<1:10	40	7.6
Mumps	2,015	461	<1:10	12	2.6
Diphtheria	386	340	<0.025	120	35.6
Tetanus	361	311	<0.01	62	19.9
Pertussis	169	186	<1:8	41	22.0
Varicella/ Zoster	N/A	1,167	<1:8	171	14.7

HEPATITIS SEROLOGY

	1983-1984			1984-1985		
	Number Tested	Number Positive	Percent Positive	Number Tested	Number Positive	Percent Positive
HBsAg	9,765	460	4.7	10,592	724	6.8
Anti HBs	3,499	892	25.9	2,973	1,183	39.8
Anti HBc	2,972	619	20.8	1,605	629	39.2
HBeAg	477	89	20.0	384	126	32.8
Anti HBe	446	106	23.8	387	144	37.2
HAV IgG/IgM	1,630	521	32.0	2,177	902	41.4
HAV IgM	3,607	553	15.3	3,097	636	20.5
Anti HBcIgM	NA*	NA	NA	93	9	9.7

NA: Not applicable.

TOXOPLASMOSIS SEROLOGY

A. Number of Tests

	1983-1984	1984-1985
PHA	12,514	11,983
IFA	2,137	2,346

B. Details of Prenatal Survceillance - 1984-1985

Number Tested	Number Susceptible	Percent Susceptible
10,004	9,234	92.4

C. Details of Toxoplasma Diagnostics

	Number Tested	Number Positive	Number Prenatal Positive
IgM	101	7	1

RESPIRATORY SEROLOGY

A. Tests Done on Single Bloods

1984-1985

	Number Tested	Number Positive
ASOT	3,477	641
ADB	1,210	371
Cold Agglutinins	833	11
Infectious mononucleosis (spot test)	3,395	121
Q fever (mainly sheep)	204	0

B. Tests Done on Paired Bloods

	Number Tested	Seroconversion	Significant Change in Antibody Level	High Static Titre
Adenovirus	2,434	18	2	16
RSV	2,257	9	-	8
Parainfluenza 1	2,250	8	-	7
Parainfluenza 2	2,234	5	-	1
Parainfluenza 3	2,252	3	-	1
Influenza A	2,364	37	2	16
Influenza B	2,351	48	8	10
Mycoplasma pneumonia	2,789	18	3	22
Legionella spp.	496	3	-	49
Chlamydia spp.	385	3	-	-
Q fever	146	-	-	-

HERPES SEROLOGY

Herpes viruses - 1984-1985

	Number of Sera Tested	Seroconversions	Significant Change in Antibody Level	Number IgM Positive
Herpes simplex	2,588	31	15	5
Herpes zoster	1,268	22	1	NA
Cytomegalovirus	2,658	6	2	1
Epstein-Barr IgM	2,246	NA*	NA	112

*NA: Not applicable

MISCELLANEOUS VIRUS SEROLOGY

	Number of Sera tested	Seroconversions	High Static Titre
Measles	667	-	13
Mumps	412	4	2
RMSF	51	-	-
Lymphochoriomeningitis	19	-	-
Rotavirus	427	4	4

TABLE VIII

PARASITOLOGY

	1983-1984	1984-1985
A. Number of stools examined	10,911	9,697
Protozoa		
Dientamoeba fragilis	14	11
Entamoeba histolytica	131	51
Giardia lamblia	320	419
Cryptosporidium	10	33
Blastocystis hominis	384	332
Chilomastix mesnili	23	28
Entamoeba coli	417	371
Entamoeba hartmanni	92	78
Endolimax nana	242	210
Iodamoeba butschlii	38	17
Trematodes		
Clonorchis/Metagonimus/Heterophyes/Opisthorchis/Methorchis	12	42
Schistosoma sp.	10	9
Cestodes		
Diphyllobothrium latum - ova	8	17
- segments	3	6
Hymenolepis nana	3	12
Taenia sp. - ova	2	1
- segments	1	1
Nematodes		
Ascaris lumbricoides - ova	57	94
- segments	17	11
Enterobius vermicularis - ova	9	14
- segments	2	5
Strongyloides stercoralis	2	10
Hookworm sp.	94	72
Trichostrongylus sp.	0	6
Trichuria trichiura	97	90
B. Arthropods detected		
Lice	1	5
Nits	1	1
Mites	2	0
Ticks	2	1
C. Number of blood smears examined for Plasmodium	18	12
D. Serology	Number Tested	Number positive
Amoebiasis	50	4
Hydatid Disease	29	3

TABLE IX

ENVIRONMENTAL MICROBIOLOGY

	1983-1984 # OF SAMPLES	1984-1985 # OF SAMPLES
A. WATER		
Membrane Filtration (MF)	37,725	39,484
Most Probable Number (MPN)	5,992	7,796
Total Waters Tested	43,717	47,280
B. FOOD		
Surveillance		
Food	2,051	348
Ice Cream	-	1,607
Outbreaks		
Food	534	268
Ice Cream	-	-
Total numbers of foods tested	2,585	2,223

Note: A total of 591 food samples were of unacceptble standards for testing.

	1984-1985 # OF SAMPLES TESTED
C. WATER AND WASTEWATER TESTED FOR ENTERIC VIRUSES	
SOURCE/TYPE OF SAMPLE	
Shoal Lake Water	32
Roblin Sewage Lagoon	16
Beaches on Lake Winnipeg	4

D. RESULTS OF 1984-1985 RECREATIONAL WATER STUDIES

	# TESTED BY MF						# TESTED BY MPN	
	For Fecal Coliform	# Pos.	For Fecal Strepto-coccus	# Pos.	For Staph Aureus	# Pos.	For P. aerugin-osa	Number Positive
Lake Winnipeg	2,193	177	2,192	1,990	-	-	-	-
Victoria Beach	55	0	60	53	95	4	369	94

RESULTS OF WATER ANALYSES
1984*-1985

MEMBRANE FILTRATION (MF)

Source/ Type of Sample	Total Number Tested for TC	Number Positive for TC	Total Number Tested for FC	Number Positive for FC
Municipal	15,110	728	469	27
Wells	4,141	636	262	15
Ice	114	15		
Watermains	489	12		
Swimming pools	1,973	107	24	10

MOST PROBABLE NUMBER (MPN)

Nursing Stations	1,010	179	390	54
Wells	35	20	14	11
Lakes	687	83	163	3
Rivers	339	57	135	14
Barrels	18	0	14	0
Water Trucks	93	6	43	2
Pumphouses	84	7	13	0
Standpipes	93	3	14	1
Misc. (Cisterns, Pits, Buckets, Docks, Ponds)	159	22	50	10
Sewage	1,560	1,141	1,560	722

TC: Total Coliform
FC: Fecal Coliform
*Data for April 1984 not available.

SPECIAL TESTS

Class	Type	Number of specimens	Tests
Bacteria	Air	21	
	Salmonella	831	831
	Iron Bacteria	21	21
	Shigella	4	4
	Pseudomonas aeruginosa serotyping	45	
	Egg wash	134	
	Legionnaires bacilli	119	133
	Limulus Amebocyte Lysate assay (endotoxin testing)	8	8
Fungi		24	39
Parasites	Giardia	23	222
Viruses	Quality Control	14	
	ELISA for WEE	2	24
	IgM (colum separation for WEE)	11	11
	IFA for IgM and Identification of Isolates of WEE	23	

ARBOVIRUSES
1984-185
With Comparison to 1983-1984

	1983-1984		1984-1985	
	Number Tested	Percentage Positive (No. Pos.)	Number of Positive/ No. tested	Percentage Positive (No. Pos.)
1. Surveillance WEE				
a) Serology				
sentinel chickens	1318	33%*(272)	823	1.6%*(13)
sparrows	199	8.5%*(17)	Mature 188 Juvenile 216	5.3%*(10) 0.5%*(1)
humans (sero-survey)	130	3.8%*(5)	142	2.8%*(4)
	Number Tested	Number Positive	Number Tested	Number Positive
b) Virus Isolation from mosquito pools	1633	72 (50 WEE) (6 CV) (2 CE) (14 HPF)	1079	5 WEE
2. Diagnostic				
humans	855	18*	159	0
horses (WEE)	47	23*	8	0

WEE: Western Equine Encephalitis
CV: Cache Valley
CE: California Encephalitis
HPF: Hart Park Flanders

*Based on $\geq$4 FOLD Titre rises or Presence of SPECIFIC IgM Antibody.

TABLE X

METABOLIC DISEASES FINDINGS
1984-1985

	IDENTIFIED IN 1984-1985	TOTAL TO MARCH 31, 1985
PKU	1	19
Galactosemia	1*	4
Prolinemia	-	3
Histidinemia	3	16
Maple Syrup Urine Disease	-	2
Tyrosinemia	-	1
Hypothyroidism	2	20
TBG deficiency	-	2
Cystinuria	-	5
Glycinemia	-	1
Hartnup Disease	2	5
TOTALS	9	78

*Compound heterozygote